COAL AGE

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The Lucky Thirteen

Written Expressly for Coal Age
By RUFUS T. STROHM

Mining figures sure were checkered,
Running medium to low,
Never coming near a record
Till about a month ago,
When the output curve went crawling
To a sharp and dizzy peak,
For the mining men were hauling
Thirteen million tons a week.

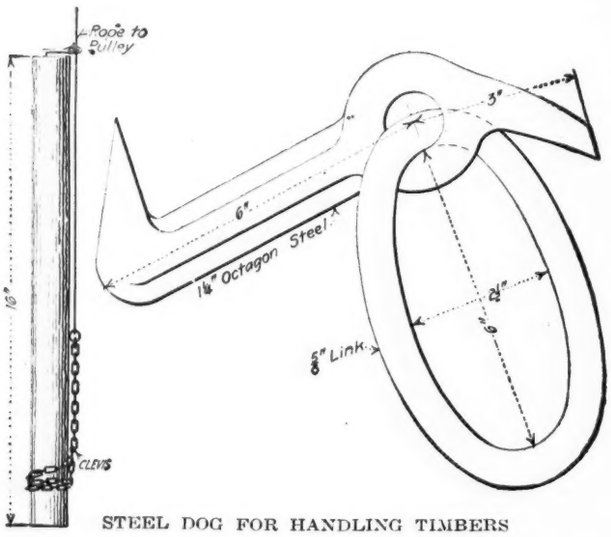
Then there came the news exciting
Of the scrap at La Chapelle,
Where our doughboys, keen for fighting,
Gave the storm troops merry hell;
And they'll keep the Fritzies going
In a scared and frazzled streak
If the mines will keep on showing
Thirteen million tons a week.

That's the figure that we're needing
If we'd keep munition plants,
Factories and shipyards speeding
To supply the boys in France;
For they'll win this bloody duel
With the Kaiser and his clique,
But we've got to have the fuel—
Thirteen million tons a week!

IDEAS AND SUGGESTIONS

Dog for Lowering Mine Timbers

Timbers when being lowered or hoisted occasionally get away, even when a chain is used to grip the piece, says the *Engineering and Mining Journal.* This is especially true if the timbers are icy or wet. At the Hecla mine at Burke, Idaho, much heavy round timber has to be either lowered or hoisted. The caps used in the timbering are green timbers of an average



STEEL DOG FOR HANDLING TIMBERS

diameter of 14 in. They run from 7 to 16 ft. long. The posts are about 8 ft. long and 10 in. in diameter. Yet these heavy timbers are handled safely and easily by the use of dogs, chains and wire rope, the motive power being an air hoist.

The chain is attached to the end of the cable. Instead of having a ring at the end, this chain, which is longer than usual, has a strong clevis. When timber is being hoisted the chain is wrapped round the stick and fastened to itself by means of this clevis. When timbers are being lowered the clevis is used as a means of fastening a ring to the chain, this ring having several timber dogs which are themselves secured by short chains. In lowering timbers, reliance is placed entirely upon the dogs, several being sunk into the stick if it is large.

The timber dog illustrated above is made of 1¼-in. steel, and one end is turned up and pointed after the usual manner. The other end is bent down. When the workman desires to remove the point of the dog from the timber he hits the dog on this downward bend and the dog is released.

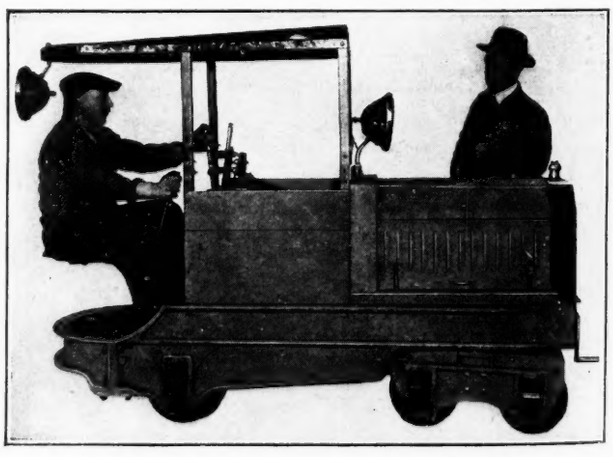
About two-thirds of the way from the point of the dog the drill steel is flattened and a hole about 1 in. in diameter is punched through it. A long narrow link made of ⅝-in. steel and large enough to slip easily back and forth over the rope and chain is then put through and welded.

In hoisting timber, the dog is fastened loosely to the cable by means of this link. First the chain is wrapped several times around the timber near the bottom and fastened to itself by the clevis. Then the dog is slipped up along the cable until it can be sunk into the top end of the stick. When the top of the timber has been hoisted level with the landing floor in a stope, a picaroon is applied and the dog at the top knocked loose. Then, as the timber is hoisted further, the top end skids out on the floor, and the stick is guided by means of the picaroon to the place where it is to be used.

In lowering the timbers, a ring to which four dogs are fastened by short chains is used. If the timber to be lowered happens to be large, it is lowered singly and with three dogs. If the timbers are small, several are lowered at one time, a dog being sunk into each near the top. Whether the timbers are lowered singly or several at the same time, they are fastened only at the top, so that as soon as the floor is reached they can be landed easily by the use of a picaroon applied at the lower end, the workman walking out into the stope with the timber. Thus when lowering as well as hoisting timber, the bulk of the weight is kept on the cable, and the work of landing a heavy piece is reduced to a minimum.

This Ford Handles Mine Cars

The illustration shows one more use to which the universal Ford motor has been put and its adaptability for underground haulage problems. The locomotive was built by the McFarlane-Eggers Machinery Co., of Denver, and is now operating in the Royal Flush mines, of



FORD MOTOR USED FOR HAULING

Columbine, Colo. Details of the body are apparent from the illustration. The locomotive has a four-wheel fore truck which is pivoted to the frame. The frame consists of three iron castings, on which the well-known bonnet and a wooden cab and seat have been mounted.

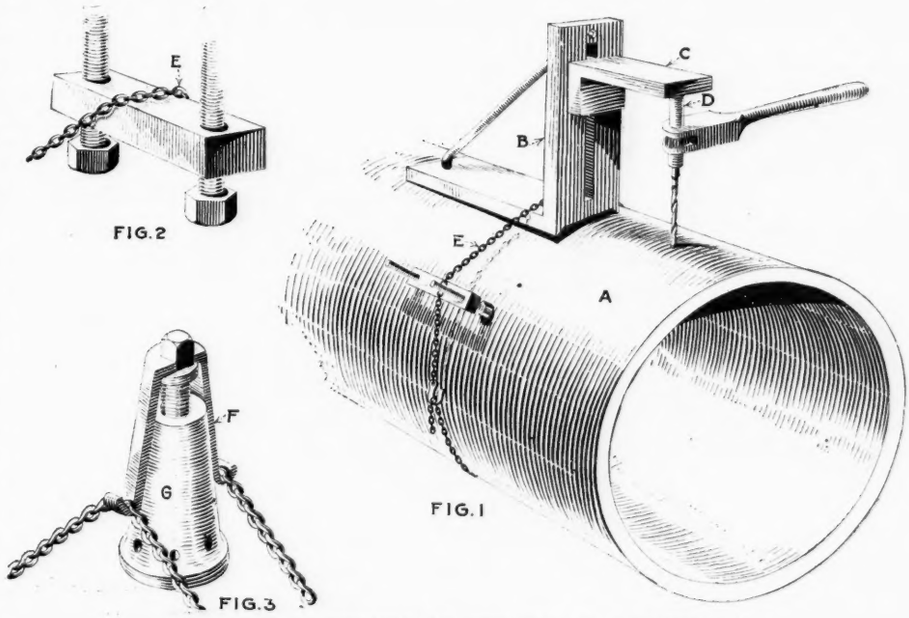
The locomotive shown operates over an 18-in. gage track and will negotiate an 8-ft. radius curve. It is 30

in. wide, 7½ ft. long and weighs 2500 lb.; and the overall height at the cab is only 4 ft. The locomotive travels at a speed of 10 miles an hour and will draw from six to eight one-ton cars. This adaptation of the Ford motor will undoubtedly solve many problems in small outlying districts heretofore handicapped by the necessity of choosing between costly hand tramming over long distances or expensive and unwarranted haulage installations.

An Old Man Fastening

By J. A. Lucas
Ozone Park, N. Y.

A simple method of fastening an old man to large cylinders or boilers, where no holes for clamping are available, is shown in Fig. 1. *A* represents a boiler shell or tank, to which is attached an angle frame or knee *B*, carrying the angle piece *C* (which may be adjusted for vertical height on *B* by means of the bolt shown) forming a fulcrum for the feed sleeve *D*. The chain *E* passes around to secure the angle frame *B* to it. It is tightened by means of the device shown in Figs. 2 and 3. In using the clamping device shown in Fig. 2 the chain has to go around the cylinder only once. Its operation is self-explanatory. The clamping device shown in Fig. 3 necessitates the chain to pass around twice; in use the loose chain is placed in the yoke *F*, which in turn is slipped on the square-head screw of the jack *G*. The chain is then tightened by means of the jack. Such devices as the one here described permit the use of the old man upon surfaces where the ordinary means of attachment, such as bolts and clamps, cannot be employed.



FIGS. 1 TO 3. DETAILS OF THE OLD MAN FASTENING

Electric Locomotives and Trucks

The electric locomotive has already made a well-established place for itself in the coal-mining industry. It appears in two general forms—the trolley locomotive and the storage battery machine. Each of these has its place of peculiar advantage, and the manufacturers of electric locomotives have a fund of interesting ideas and data on tap as to where and how one may give the best service, and where the other may be more satisfactory.

Broadly speaking the question of selection hinges upon local conditions and requirements. The generally accepted logic is that the trolley locomotive is more economical in power consumption while the battery locomotive is adaptable to service where it is not practical to handle a trolley machine, especially in new openings and drifts before the work has progressed far enough to warrant the equipment of a trolley line. Also it is often argued that the service rendered in what might be termed pioneer progress of new work by the battery locomotive outweighs any disadvantage in power cost.

The electric locomotive of the battery type, like its cousin the electric truck, has had the experience of being viewed with favor, then seeing the favor suddenly swing around and center upon the remarkable and startling progress of the gasoline motor. This applies both to commercial trucking and pleasure vehicles. Now we are seemingly swinging around in the circle to where favorable attention is focusing once more upon the electric storage battery, both for locomotive work and for trucks.

Taking into due consideration the fluctuations in the value of coal at the mines, experience has demonstrated that electricity can be produced in proper power plants at the coal mines in commercial quantity more economically than by waterfalls. All of this leads in a roundabout way to the subject of electric locomotives and trucks. Coal producers not only quite commonly have a direct interest in the operation of some electric locomotives in their own plants, but they have a broad interest in the development of power units generally for the production of electricity. To state it another way, a wider and more extensive use of electric trucks and pleasure cars would mean quite a considerable increase over the amount of fuel that is now being consumed in the production of electricity for power and other industrial purposes.

Moreover, it is interesting to note that considerable progress in the way of improvements have been made in electric storage batteries. Perhaps it would be too much to say that we are on the eve of a return of wide favor to electric cars and trucks. At the same time, however, we know that gasoline is comparatively high priced and the adaptation of the gasoline engine to perform individual and home requirements has so extended the demand for gasoline that already some concern is manifested about the future supply.

Longwall Mining at La Salle, Illinois

By GEORGE W. HARRIS
Editorial Staff, "Coal Age"

THE La Salle mining field of Illinois is full of association and interest to many coal men, both operators and miners. The name La Salle will catch the eye of coal men the country over, for in this old longwall region many received their training. Some of the old-timers still remain in positions of trust—both as officials and as miners of coal. It was at Spring Valley, in this field, that John Mitchell spent his early days.

Among the prominent mining companies in the La Salle field is the La Salle County Carbon Coal Co., with four plants—La Salle, at the town of the same name; Union, at Peru; No. 1, at Johnsville, and No. 5 at Cedar Point. This company operates the oldest mine and the newest mine in this longwall field. The La Salle mine was opened up by a shaft in 1856, when the No. 5 seam was worked by room-and-pillar until 1880. At the later date the shaft was sunk to the No. 2 seam, which has been continuously worked by longwall. It has the distinction of being the first mine in the district to be worked by longwall.

In 1868 the No. 1 mine of the La Salle company was opened up at Johnsville, which is two miles south of La Salle. The Union mine at Peru was started in 1874, and the No. 5 plant was developed in 1906 at Cedar Point, which is five miles southwest of La Salle. This latter mine was the latest longwall operation to be developed in the field. These plants are near the Illinois River, on the Rock Island R.R., and in the northern central part of the state. In fact, the region constitutes the northern limit of the Illinois coal fields. The La Salle anticlinal is to the east of the properties of the La Salle County Carbon Coal Company.

The coal seams are somewhat disturbed, as the pitch of the beds is about 40 to 50 deg. at the anticlinal instead of practically flat, as is the case elsewhere. Coal is disposed to be rather shelly where disturbed, and the top also changes. At this point the anticlinal tips to the west. The modification in the method of mining on this heavy pitch is described in the June 17, 1916, issue of *Coal Age*, under the title of "Steep-Seam Longwall in Illinois," by C. A. Herbert.

Ideal Longwall Conditions

The No. 2 seam worked at all the mines of the La Salle company averages about 40 in. in thickness. It is uniform throughout the district and lies at a depth of 350 to 550 ft. below the surface. The roof is a grey shale, or soapstone; the floor is a fireclay, several feet in thickness, below which is sandstone. The immediate roof and floor furnish abundant material for packwalls. Practically no gas or water are found in these mines. In fact, water is piped down the La Salle shaft for use in watering the entries and haulageways, which otherwise would be dry and dusty.

Until a few years ago all the mines in the first district were pick mines. The La Salle company was a pioneer as regards the use of electricity underground. Three or four years ago the first electric hoist in the region was installed at the Union mine. It was also one of the first longwall mines in the field to put in trolley haulage. Of the four mines of this company, La Salle and Union mine coal by machines. At the time of their installation there was considerable opposition to their use and great adverse comment to this change in the generally accepted method of mining in the locality.

A few facts of general interest might be noted about each of the four plants of the La Salle County Carbon Coal Co. The history of the La Salle mine has been an eventful one. The surface works burned down three times at this operation. There are three Sullivan longwall mining machines and one 5-ton Goodman electric locomotive at the La Salle mine. The gathering of coal is done by ten mules. The capacity of the plant is about 700 tons daily, but 400 tons is the present output. There are 142 inside men at the La Salle mine, 106 being miners or loaders.

Machine Longwall Mining

At the Union colliery there are five Sullivan longwall mining machines and one 5-ton Goodman electric locomotive. Gathering is done by mules. The success of the method and the type of mining machine used is attested by the fact that additional machines are to be installed at this plant. There are 171 inside men employed here. The capacity of the Union mine is the same as that at the La Salle operation.

No. 1 and No. 5 are pick mines; the former employs 207 men and has a capacity of 950 tons daily (650 at present); the latter has 252 inside men, with a present capacity of 800 tons (the mine would be capable of producing 2500 tons daily if labor and cars were available). At No. 1 colliery the haulage is done by two Goodman electric locomotives; and mining machines will be installed in the fall. All the mines are working at only about 60 per cent. of their rated capacity. An article on "Longwall Mining in Northern Illinois," by E. T. Dent, appeared in the July 17, 1917, issue of *Coal Age*, in which was illustrated the No. 5 tipple of the La Salle company. It is an up-to-date steel structure.

Electric power for use at the plants of the La Salle company is purchased of the Illinois Traction System, current being delivered at 2200 volts alternating current. For mining machines, alternating current of 240 volts is used, and 250 volts direct current for haulage. At the Union mine there is a motor set underground to produce direct current for haulage. At the La Salle mine the motor generator-set is on the surface. At this latter plant mining machines using direct current were installed at first, these being changed later for those of the alternating-current type.

A "canny" Scot, who had spent a lifetime in longwall mines in his native country and in this, the land of his adoption, was asked what are ideal longwall conditions. He replied: One foot or so of fireclay under the coal; 3 to 3½ ft. of coal—better to be fairly strong; shale or similar material as top rock—furnishing easy brushing and good material for walls. The shale top might be

10 ft. or more thick to advantage. On inquiry as to what should be done in case of a hard sandstone top, he answered: Shoot down the top or get packing material from the bottom. Such conditions are typical of many districts in Scotland, he added. How nearly the ideal longwall conditions noted correspond to those existing in the La Salle region.

The accompanying illustration, Fig. 1, shows actual mining conditions at the La Salle company's No. 5 mine. In all old mines development included a three-compartment shaft; two compartments were used for hoisting and constituted the downcast; the third compartment was boarded off from the others and was the upcast. This method is open to objection as regards efficient ventilation, in that the division board partition seldom remains tight. A more serious objection, in case of a bad accident in the shaft or an explosion in the workings reaching the shaft, is that the ventilation might be destroyed and great difficulty be experienced in restoring it within a reasonable length of time. In modern mines the hoist shaft is the upcast and the second or escape shaft is the downcast. The No. 5 mine of the La Salle company is an example of this latter arrangement. The other three mines are older and have three-compartment shafts.

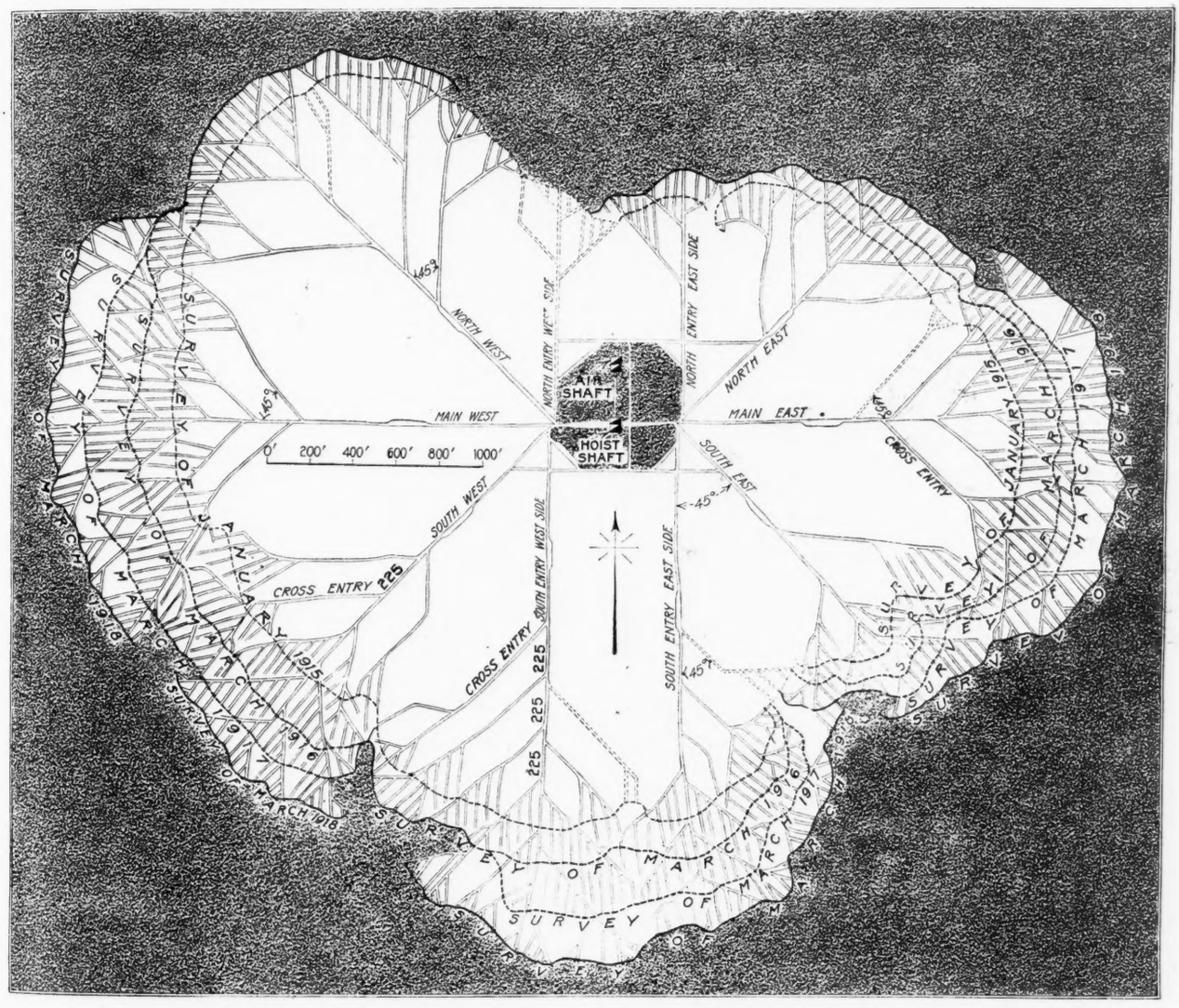


FIG. 1. MAP OF LONGWALL MINE AT PLANT NO. 5 OF LA SALLE COUNTY CARBON COAL CO., NEAR LA SALLE, ILLINOIS

There are two principal methods of proceeding when the shaft reaches the coal bed which is to be mined; one is to leave a sufficient coal pillar to protect the shaft and the other is to remove all coal and let the packs, or packwalls, settle at once. The advantages of driving narrow work to the boundaries, then starting the face and working back to the shaft, are well known. This method requires considerable deadwork before returns are realized, and necessitates large capitalization. The other method, or longwall advancing, is generally employed, for obvious reasons.

As regards opening up a longwall mine, the shaft may be thrown out of plumb if the right conditions of mining are not carried out, whether with or without coal pillars at the foot of the shaft. When all the coal is removed around the shaft bottom, settlement of packs must be gradual and sudden slipping of large masses of rock be avoided if the shaft is to be kept in alignment. However, when the top rock comes to rest permanently, then the job is finished and the expense and worry about the shaft protection ordinarily are over. The advocates

of this method are willing to take chances of shaft trouble in the beginning in order to have immunity from all such annoyance in the future. The claim is made that with either method of opening the mine the shaft may be endangered at this time. At the escape shaft at No. 1 mine all coal was extracted around the bottom at the beginning.

Other great advantages claimed for removing the coal around the shaft are that the expense of timbering the bottom is reduced and that roof weight begins sooner to ride on the working face. Those operators who leave coal for shaft protection admit these advantages, but claim the great uncertainty of being able to control subsidence, which may seriously affect the shaft as the coal is being removed.

If the coal is to be left in at the shaft bottom, it is necessary to judge about right as to what constitutes sufficient protection for the shaft. The depth of the seam below the surface, the nature of the rock immediately over and under the bed, as well as higher up, are important considerations; also the thickness of the seam and its crushing strength. A number of well

FIG. 2. OFFICES OF LA SALLE COMPANY

known formulas are available for reference as to what size shaft pillar should be left.

It is a matter of record among a number of authorities on this subject that given a shaft 300 ft. deep and a 6-ft. seam, the size of a pillar varies from 70 to 300 ft. square, according to which formula is used. No hard and fast rule can be given for determining the size of the shaft pillar in any particular case. But the rules of those who have carefully investigated the size of pillar required within certain practical limits, and suited to different conditions of roof strata, are useful. Local practice often reflects the experience of years, and it is generally safe to consider such guides in planning new work.

The greatest difficulty in starting longwall operations is in leaving the shaft pillar and establishing the longwall face. A common method in the La Salle field is to drive main entries from the hoisting shaft through the shaft pillar. Then the shaft pillar is usually blocked out by driving entries around it. In many cases these latter entries are driven wide enough to permit of good wooden cogs and packwalls being put in, so that the coal of the shaft pillar may not spall off and the entries be kept open. Great care must be taken in leaving the pillar to pack the ground solid.

The shape of the property to be developed largely determines the layout of a longwall mine. Ordinarily, development proceeds with the shaft pillar as the center of the prospective mine with main entries leading off in eight principal directions, consecutive entries having an angle of 45 deg. between them. From these entries rooms are turned at an angle of 45 deg. and spaced so as to give a distance apart of about 42 ft. at the face. As the distance of the face from the shaft increases, cross-entries are driven from the main entries and new rooms may be opened up from the former. Engineering skill finds an opportunity in longwall mining as well as in room-and-pillar work. This applies to planning a mine and in following up the progress of the working face.

Having blocked out the shaft pillar and laid out the mine for best development, mining is commenced on the approved lines, looking to the establishment of the working face. A critical time in longwall mining occurs when the first roof break takes place, or at the time when it is expected. As in pillar work in room-and-pillar mining, roof pressure is an important consideration. The nature of the top largely influences operations. With a thick sandstone or limestone roof, large openings are frequently made by the removal of pillars without falls of top occurring at first. Sometimes all props in the robbed-out area are removed, and heavy shots are necessary to bring about a good break in the top. Once established, robbing generally proceeds with no unusual difficulties in all well regulated mines.

Contrary to room-and-pillar practice, in longwall mining the roof pressure is essential to break down the coal—roof pressure should be the only permissible explosive in the coal itself at the longwall face. In opening up the longwall mine the first roof break may not occur until the face has advanced 100 ft. or more from the shaft pillar. When the top is moving properly, it bends at the face and settles down on the packwalls and gob (space between the packs); cracks generally appear at regular intervals and parallel with the face. Especially in machine mines a space of about 3 ft. is required at the face in which to operate the mining machines. The top usually cracks at the edge of the coal and often breaks just beyond the props set 3 ft. back. With proper packing the distance between breaks should correspond to the width of the coal brought down.

The longwall face being established, the operations of the mine proceed regularly if the packwalls are kept up in good shape and the face in line. The mine should be so laid out that development is symmetrical, the face forming approximately a circle with the hoisting shaft as the center. Sometimes the face takes the shape of an ellipse rather than a circle. The main entries and branches are projected so as to constitute a comprehensive haulage system as the mine develops. When packwalls are first made they are often spaced 10 to 12 ft. apart, lining the roads, to allow for the bulging when the roof weight settles on them, which causes narrowing of the roadways. The rooms are laid out so as to reach the face practically perpendicularly, and to block it off in about 42 ft. sections. A track is laid to the face of each room. As the rooms reach a length too great for profitable operation, cross-entries are turned off and new rooms are started from these entries—everything

proceeding on the 45-deg. system. It is important to have longwall rooms at right angles to the face, as the top rock settles better and the brushing of the top is easier.

Fortunate is the operator, during these days of the necessity for high production and with scarcity of labor, who has mechanical equipment adapted to his needs. The La Salle company was the first to install mining machines in the northern Illinois longwall field, and plans to add to the number on hand in the near future. The La Salle and Union plants of this company are machine mines and haul coal by motor.

The coal is undercut by Sullivan longwall machines, at the mines noted, to a depth of 4 ft. Each machine covers about 1000 to 1500 ft. of face, and after finishing this cut is moved back to the point of beginning. In some mines each machine continues on around the whole face; this plan avoids moving the machine back again, but it is a serious disadvantage when one machine in the lot is held up for one reason or another.

In the La Salle field there are more or less sulphur bands of irregular occurrence throughout the seam, especially in that portion of the bed next to the bottom. When a mining machine strikes a sulphur band, or ball, the bits are quickly incapacitated for further service; the hard sulphur either dulls them or in some cases breaks off the point. For this reason, a machine often undercuts an average of only 10 to 12 ft. of face with one set of bits. A machine gang includes a runner, a bit setter and a timberman. The latter follows the machine and sprags or blocks the coal by placing wedges in the kerf or undercut about every 6 ft. of face.

After the coal is undercut, the loader waits a certain length of time for the coal to break on account of the roof pressure. Meanwhile he snubs the coal or enlarges the kerf, so that the coal may fall better. Otherwise it might drop in a mass. Seldom should powder be used in loosening coal in longwall work. Occasionally a loader will use it at the center, opposite a haulageway or room, to make a start on the coal while waiting for the top to work it. After the coal is loaded out props are set 3 ft. from the face and 1 ft. from the last break in the top; rock is then packed in at roadways up to these props. In machine mining the packing is done by day labor; in pick mining the miner contracts to brush the top and build packwalls. In pick mining, at the face the top is brushed 24 in. high, the width of the roadway (as per state contract), so there is about 6 ft. headway at haulageways. Finally, on account of settlement, 2 ft more of top is brushed to secure the necessary height. Usually back-brushing in the entries is sent out of the mine. In machine mining three to four feet of brushing is shot down and put in packwalls. This makes a larger and better pack and does away with back brushing to a large extent.

The best top breaks are about vertical. If the top is not settling right, it is likely to break back at an angle over the coal; the weight then is largely taken off the coal, and it does not work right. For various reasons a portion of a longwall face may be retarded and the regularity of the line of the face be destroyed. Closed places often lead to loss of coal. In longwall work the best results depend on all miners or loaders coming to work regularly, so that one part does not lag behind other sections. Oftentimes two roads come together in such a way that a piece of coal is left between them. In any case where the weight comes on a body of coal insufficient to support it, the coal is crushed and lost. Or, if the top breaks over it, rarely is it recovered. The waste rock should fill the gob (the space between packs) sufficiently to allow the roof to come down gradually without breaking off short at the face or packs, but should not fill the gob so completely that it carries too much of the roof and does not throw enough weight on the face of the coal.

In the case of seams containing much sulphur, trouble

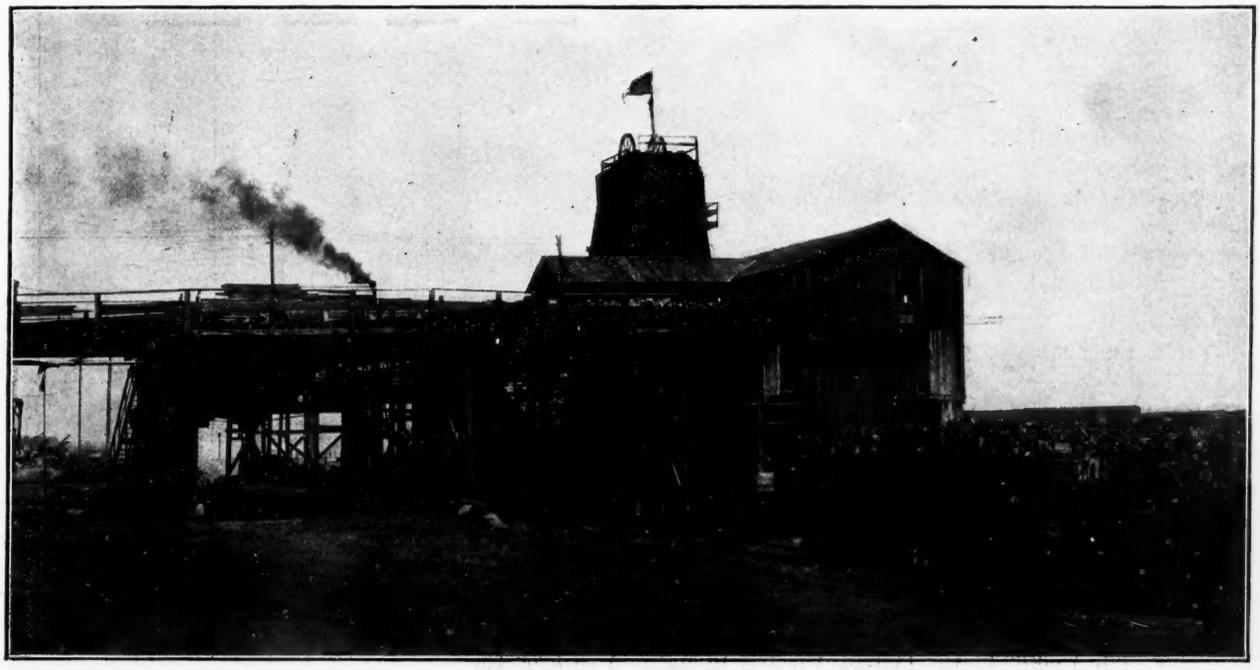


FIG. 3. TIPPLE AT HISTORICAL LA SALLE MINE OF LA SALLE COUNTY CARBON COAL COMPANY

is often caused when coal is left in the gob. The sulphur adds to the danger of fire by spontaneous combustion. A gob fire is principally objectionable on account of its heating the air, and the fumes and smoke drive out the miners in the portion of the mine reached by the affected air current. The longwall mine has every opportunity for efficient ventilation, the air current sweeping along the entire working face where it is most needed. Some air always leaks through old packwalls; the crevices are not visible, but the hissing of air at leaks is sometimes noticeable. The air currents from different splits meet in a number of instances at a point along the face at the end of return airways, but no difficulty is experienced from baffling unless the air current on one side is very much stronger than that on the other. The modern acetylene mine-lamp contributes not only to the purity of the air, but to the safety of the miner as well. There is no smoke to pollute the air and also obscure dangers by an impenetrable cloud. The La Salle company uses a carbide lamp, made by the Shanklin Manufacturing Co., of Springfield, Illinois.

Accompanying this article are two illustrations (Figs. 2 and 3) of the surface plant at the La Salle operation. The general office of the company is shown in Fig. 3. Among the officials of the La Salle County Carbon Coal Co. at La Salle are: C. C. Swift, general manager; Adam Currie, mine superintendent, and J. D. Walsh, top superintendent. *Coal Age* is indebted to the courtesy of these officials for information about their operations.

Raising Two 350-Hp. Boilers

By M. C. Scheble
Sabinas, Coahuila, Mexico

The accompanying photographs show the method recently used for hoisting into position two large Wickes boilers that are being installed to utilize waste heat from 60 beehive coke ovens in northern Mexico.

The boilers are each of 350 hp. and designed for a working pressure of 225 lb. The bare boilers, as shown, are about 35 ft. in length and the drums are 84 in. in diameter. The weight of the boilers, without fittings, is 52,500 lb. each, and this total weight had to be suspended, momentarily, to get the boilers into position to be lowered to the final location.

To handle these boilers a frame was constructed 49 ft. in height. The legs were made of 12x14-in. all-heart timbers with heavy butt splices. The headpiece was made of two 12-in. 40-lb. I-beams.

Two sets of rope blocks were constructed. The upper blocks had six 18-in. sheave wheels and the two lower blocks five similar wheels. Two "snatch blocks" were securely fastened to "deadmen" set in concrete to the rear of the boiler settings, and two snatch blocks were also similarly placed near the edge of the railroad track in front of the boilers.

Three-quarter-inch, 6 x 7 haulage cable was threaded through the blocks and the two ends brought to the railroad track, passed through the snatch blocks there and fastened securely to two 55-ton locomotives. The boilers

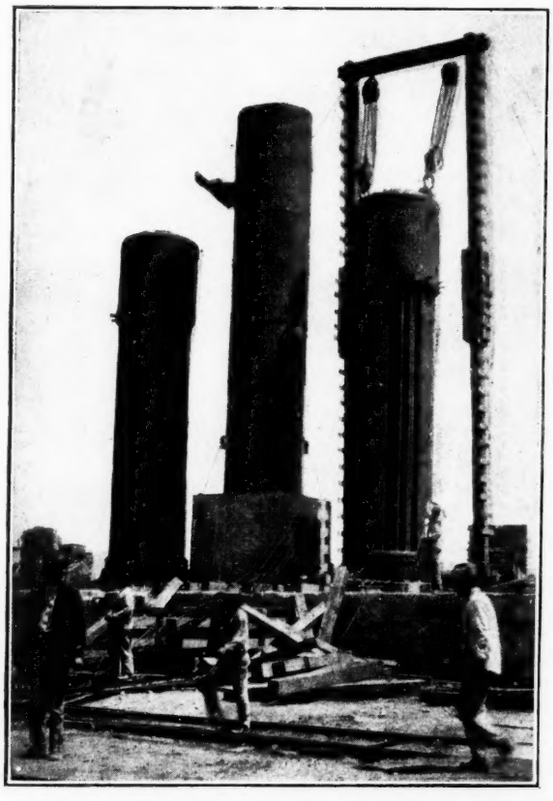
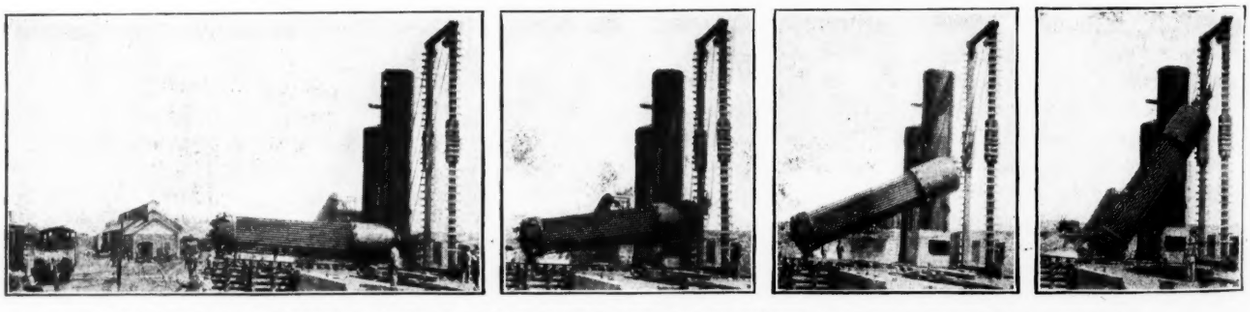


FIG. 5. BOILER IN PLACE ON FOUNDATION

were placed in the position shown in Fig. 1, the lower end being supported on four 56-lb. rails which were well greased.

When all was made ready the two locomotives moved in opposite directions and the boilers were hoisted slowly into position. The whole operation of hoisting the boiler shown in the pictures consumed 1 hour 30 minutes. The other boiler was set in position in 2 hours 20 minutes.

The lower, or rear, end of the boilers was prevented from moving forward too rapidly by means of blocks and cable, the latter being fed out from a small hand winch. The method as used proved safe and successful.



FIGS. 1 TO 4. PROGRESS MADE IN HOISTING BOILER FROM HORIZONTAL TO VERTICAL POSITION

The Coal Problem Under War Conditions*

By H. H. STOEK
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UNDER war conditions the middle man practically has been eliminated and the cost problem has assumed an entirely new aspect. Previously the product supplied a ruinously competitive and glutted market in many cases. Now there is a scramble for fuel in all parts of the country; it is only by the nicest adjustment of conditions affecting production, transportation and distribution of coal that the domestic consumer and essential industry can be supplied. In commenting on this situation, a representative of the Fuel Administration touches on increased production, the cost of coal, better utilization of fuel and the storage of coal. Some pertinent and helpful suggestions are made.

IT IS natural for every one participating in the production of war materials to think that the part of the war game in which he is a direct player is of paramount importance. Hence, the farmer, the gunmaker, the manufacturer of explosives and the railroad man each thinks he is the indispensable one; but, granting full credit to all of these and every other industry, no one can controvert the claim of the coal man that his industry is fundamental to the success of most, if not all of the other war industries. Without coal the railroads could not run, the munition plants would have to stop and the shipyards would go out of business, and no matter how large an army we might be able to raise and train, it would be impossible to equip, maintain and transport it to Europe if the coal supply were cut off.

Germany recognized the importance of coal in her initial drive toward Paris, and by over-running Belgium and northwestern France she not only protected her own coal and iron industry of western and northwestern Germany, but took from France and Belgium their coal resources and added them to the resources of Germany, thus striking a double blow at our allies.

Factors Preventing Maximum Coal Output

A detailed study of the effect of the war on the coal resources of Europe as it affects this country would be of interest, but space will not permit such a discussion in the present paper, which is confined to a few of the problems most closely connected with war conditions. The mines of the country have thus far been able to maintain an output up to the limit that the railroads could transport, and in all of the Government reports giving the reasons for the shortage the principal cause has always been the lack of cars and the lesser causes have been the shortage of labor, strikes and mine disability. In the reports for the week ending Apr. 27, 1918, the production was 74.7 per cent. of the full-time output, giving a deficit of 25.3 per cent. distributed as follows: Car shortage, 14.4; labor shortage and strikes, 4.4; mine disability, 2.8; no market, 1.2; all other causes, 2.5.

This is a creditable showing on the part of the mines up to the present time, but what of the future? The supply of new labor from southeastern Europe has been cut off, and men are being withdrawn from the mines for military service. It is becoming increasingly difficult for the mines to obtain equipment, hence operating conditions cannot improve materially; and this means more concentrated effort on the part of everyone connected with the mines if the output is to be kept up or increased to supply the natural and abnormal demands of war times.

No industry has ever been so completely revolutionized in so short a period of time as has the coal industry during the past year, and, even assuming that all of the changes made and proposed will be ultimately beneficial, no industry of the magnitude of the coal business can so completely readjust itself to new conditions without facing a number of problems that would naturally reduce production, at least temporarily.

Many Problems to Be Considered

Problem No. 1 from the standpoint of the miner and the operator would therefore seem to be to provide an increased production with a probably constantly decreasing labor supply, with material and supplies difficult to obtain and with agencies for distribution entirely different from those under which the industry has been operated for years.

Problem No. 2 might be stated as follows: What does a ton of coal cost? Prior to the war attention was being directed to this matter in various parts of the country by a number of different coal associations in an effort to furnish the Federal Trade Commission with certain information regarding the actual cost of producing coal. Throughout the country an effort was being made to get the detailed costs in a much more comprehensive way than had ever before been done.

Presumably the selling price of a ton of coal bears a fairly definite relation to its cost of production, but at the present time no one knows the exact basis upon which selling prices are determined. The cost of a ton of coal next to the cost of a loaf of bread appeals more definitely to every citizen than any other item of his daily life. Clothes are important and a necessity, but last winter's suit can be brushed up and worn again. Not so with last winter's coal pile; it is not only a definitely diminishing asset, but once gone is a permanently diminished asset which must be replaced by every householder, to some extent at least, no matter what the price may be. The coal bill, like death and taxes, is always with us. The per capita production of coal in the United States at the present time is approximately six tons per person, which means that every person in the United States must lay down at the mine mouth $12 to $18 per annum.

Every citizen is of course indirectly interested in copper and iron, but so indirectly that he does not realize the difference between copper at 15c. and at 35c., or between iron rails at $30 a ton and $90 a ton; but

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the increase in the price of coal to the domestic user of $2 to $3 per ton makes this problem one of very general and vital interest. A definite problem at the present time is therefore to determine what is the actual cost of producing coal and what is a just price for the consumer to pay.

No consumer can rightly object to paying a full, honest price for an article, which price includes a fair profit to the producer, but he has a right to object to overcharge or being made to pay for items in the cost account that do not rightfully belong there. For instance, if a certain retailer bases his profits on a number of bad debts that are excessive and due to his own careless methods of bookkeeping, and not upon a fair average of bad debts that must be included in any business, the purchaser has a right to object to thus being taxed for a part of his neighbor's bill. It is undoubtedly true that the coal producers are entitled to a much better return upon their business than that received prior to the beginning of 1917, but the skyrocket prices of the first half of 1917 brought their own downfall.

Will Better Understand Production Costs

One definite outcome of the operation of coal mines under war conditions will unquestionably be a better knowledge on the part of the coal men themselves as to what it actually costs to produce coal. Greater publicity also will be given to these costs, and the general public will learn what constitutes a fair price and in this way two very harmful pre-war ideas should be done away with: First, the too prevalent idea of the coal producer and coal dealer that the general public has no right to know what it costs him to do business and that he is at liberty to charge just what he pleases and all that the traffic will bear; and second, the general public should give up the idea that has been all too prevalent that every coal producer and coal dealer is making money at an abnormal rate. The detailed study of costs now being made also means a closer study of ways of operating and an increased efficiency in the operation of mines.

Problem No. 3 may be stated as the better utilization of the coal product of the country. It is difficult for the American people to realize that in a country having practically unlimited coal resources it is necessary for them to be careful in the use of coal. Two years ago, if a person had said that it would be necessary to curtail the output in the ceramic industries and to compel the florists to operate half-time for lack of coal, he would have been laughed at; but these things have happened, and before another winter is over no one can prophesy what may be necessary in the way of suspension in order that the absolutely necessary war industries may be kept going.

The reason for the scarcity is easy to see, and it is an easy matter to blame it on the railroads, but while the railroads may be to blame for not delivering the coal, the user of the coal can not be excused for wasting a large part of the material delivered to him.

David Hyers, a well-known mechanical engineer of New York City, last winter estimated that 117,000,000 tons of coal could be saved by more efficient management of boiler furnaces. In this way a saving of about a billion dollars could be made, or enough to pay the interest on a Liberty Loan several times greater than any yet contemplated. It would require two million freight cars to move the coal that might thus be saved, and by such a saving the difficulty of the railroads might be done away with. The stopping of this waste has become not only an economic necessity, but it is a patriotic duty as well. Not only is the power plant an uneconomic user, but every householder and every form of industry must share the responsibility. So ingrained is the idea in every American that he is at liberty to waste all of the resources of the country that he wishes, that it will take some hard knocks to shake him out of this self-complacent attitude; and it looks very much as if some of these knocks are coming in the near future, unless the same result can be obtained by education, information and voluntary effort.

Problem No. 4 may be stated as the storing of coal for future necessities and the utilization of varieties of coal to which we have been unaccustomed in the past. Whether or not we like the zoning system we have it and must govern ourselves accordingly and in many cases must learn how to use different coal from those grades which we have been accustomed to use for many years. This, of course, does not affect most of the mining regions, but in cities like Chicago it is a material problem; for in that city approximately 100,000 flat buildings have been heated by furnaces designed to use smokeless coals and operated under a smokeless ordinance to which there is a penalty attached for allowing smoke to escape into the air. Suddenly the supply of smokeless coal is shut off, and as the same appliance must be used the fireman must be taught how to burn the new fuel. While this may temporarily cause an inconvenience to people in Chicago, it must ultimately benefit the coal industry of Illinois because it has been demonstrated that Illinois coal can be efficiently burned under city conditions such as prevail in Chicago; and when the people have been accustomed to it and the market firmly established, there will be no excuse to going back to coals produced outside the state.

Question of Gas from Coal

A similar problem is the production of gas from our local coals. This question had been studied carefully for some years prior to the war, and investigations are still under way looking to a more general use of Illinois coal in gas production as well as in coke ovens. This phase of the coal problem will unquestionably be of benefit to the coal industry.

When people become convinced of the fact that they can store Illinois coal in large quantities by properly handling it, they will look upon it as merely a form of insurance and will be perfectly willing to lay up in summer and spring a sufficient quantity to tide them over the congested period in the winter when it is difficult to operate both railroads and mines, and in this way both mines and railroads should be benefited by more regular operation during the summer and spring months. If the following suggestions are observed Illinois coal can be safely stored: 1. It is practicable, advisable and advantageous to store bituminous coal not only during war times but also under normal conditions, either at the mines, near the point where it is to be used or at some intermediate point. It is well to

store coal as near the point of consumption as possible to avoid rehandling. The reasons for storing coal are: (a) To insure the fuel consumer of a supply of coal at all times. (b) To take advantage of lower freight rates, or of lower prices of coal at certain seasons of the year. (c) To permit the railroads to utilize their cars and equipment to the best advantage. (d) To permit the mines to be operated more steadily.

What Coals May Be Stored

As to the kinds and sizes of coal that can be stored: (a) Although it is undoubtedly true that some coals may be stored with greater safety than others, the danger from spontaneous combustion is due more to improper piling of coal than it is to the kind of coal stored. (b) Most varieties of bituminous coal can be stored in the air if of proper size and if free from fine coal and dust. The coal must be so handled that dust and small coal are not produced in excessive amounts during the storing because spontaneous combustion is due mainly to the oxidation of the coal surface. All varieties of bituminous coal can be stored under water, which excludes the air and prevents spontaneous combustion. The danger of spontaneous combustion in storing the coal is very greatly reduced if not entirely eliminated by storing only lump coal from which the dust and fine coal have been removed. Of two coals the least friable should be chosen for storage purposes because less dust and fine coal will be produced in its handling. (c) Fine coal or slack has sometimes been successfully stored (1) by preventing air currents through the coal pile by means of a closely sealed wall built around the pile; (2) by closely packing the fine coal: Such a coal pile must be watched for heating. Piles of slack must be closely watched for rise of temperature and means provided for promptly moving the pile if heating develops. The only absolutely safe way to store slack or fine coal is under water. (3) Many varieties of mine-run coal can not be stored safely because of fine coal and dust mixed with the lumps. (4) Coal exposed to the air for some time may become "seasoned" and thus may be less liable to spontaneous combustion due to the oxidation of the surface of lumps of coal but opinions are by no means unanimous upon this point. (5) It is believed by many that damp coal stored on a damp base is peculiarly liable to spontaneous combustion, but the evidence on this point is by no means conclusive. It is safer not to dampen coal as it is being stored or after it is placed in storage.

3. As to the effect of sulphur on spontaneous combustion: It has been shown by experimentation that the sulphur contained in coal in the form of pyrites is not the chief source of spontaneous combustion, as was formerly supposed; however, the oxidation of the sulphur in the coal may assist in breaking up the lumps of coal and thus increase the amount of fine coal, which is particularly liable to rapid oxidation. Even this latter opinion is not unanimously indorsed. In spite of experimental data showing that sulphur is not the determining element in spontaneous combustion the opinion is widespread that, if possible, it is well to choose a coal with low sulphur content for storage purposes.

4. Regarding the method of piling coal: (a) To prevent spontaneous combustion either coal should be so piled that air can circulate through it freely and thus carry off the heat due to oxidation of the carbon, or else it should be so closely piled that air can not enter the pile at all, and thus the fine coal will not be oxidized. (b) Stratification or segregation of fine and lump coal should be avoided since an open stratum or a chimney of coarse lumps of coal gives a passage for air to enter and come in contact with fine coal and thus oxidizing and starting combustion. (c) If space permits, low piles are preferable, as the coal is thus more exposed to the air and better cooled than in high piles; also, in case of heating it can be more readily and quickly moved. A disadvantage in high piles is the greater difficulty of moving the coal quickly, if necessary. The idea that a high pile causes heating at the bottom is erroneous, since as many fires take place near the top as near the bottom and near the outside as near the interior of the pile. If possible the coal pile should be divided by alley ways so as to facilitate rapid loading out of the coal in case of necessity so that an entire coal pile may not be endangered by a local fire. (d) Much of the attempted ventilation of coal piles in the United States has been inadequately done by the use of only an occasional ventilation pipe which has been not much more than a place in which to insert a thermometer for reading temperatures. The practice of placing ventilating pipes close together has been used in Canada and is reported to have been effective. (e) Water is an effective agent in quenching fire in a coal pile if it can be applied in sufficient quantities to thoroughly cool and put out the fire, but a small amount is ineffective. Unless there is an ample supply of water to thoroughly quench the fire and cool the pile, it is dangerous to add any water to a coal pile. (f) Coal of different varieties should not be mixed in storage if this can be helped, for one coal that has a greater susceptibility to spontaneous combustion than the other may jeopardize the safety of other coals that are not so liable to spontaneous combustion.

Some Practical Storage Suggestions

5. The effect of storage on the value of coal: (a) The heating value of a coal as expressed in B.t.u. is decreased very little by storage, but the opinion is widespread that storage coal burns less freely when fired in a furnace. Experiments indicate that much of this can be overcome by keeping a thinner bed of coal on the grate than is kept with fresh coal and by regulating the draft. (b) The coking properties of most coals seem to be decreased as a result of storage. (c) The value of coal for making illuminating gas is not decreased as a result of storage. (d) The deterioration of coal stored under water is negligible and such coal absorbs little extra moisture. If only part of a coal is submerged, the part exposed to the air is still liable to spontaneous combustion.

6. Additional precautions: (a) The best preventative of loss in coal storage is to regularly inspect the pile and if heating occurs (up to 150 deg. F.) to keep close watch on the pile, and if the heating increases to 175 or 180 deg. to remove the coal as promptly as possible from the spot affected and thoroughly cool it before piling it again. (b) Storage appliances and arrangements should be so designated as to make it

possible to load out the coal quickly if necessary, and the coal should not be stored in large piles unless provision is made for loading it out quickly. (c) Pieces of wood, greasy waste or other easily combustible material mixed in a coal pile may form a starting point for a fire, and every effort should be made to keep such material from the coal as it is being put in storage. (d) It is important that coal in storage should be kept from such external sources of heating as steam piles, because the susceptibility of coal to spontaneous combustion increases rapidly with an increase in temperature.

These are but some of the problems due to war conditions, and while there may be some temporary embarrassment and inconvenience resulting from them, I am personally convinced that as a result of the war the coal industry will be benefited. On account of the prominence given to the subject of coal and the widespread discussion of it, the coal industry is even now better known and more talked of than any other industry in the country. P. T. Barnum once said that he did not care what people said about him so long as they said something, for in that way they thought of P. T. Barnum. So it will be with the coal industry. If people think about it enough, they must ultimately know something about it and have a more intelligent understanding of the coal problem than they have had in the past and thus be more sympathetic to the miner and operator and not antagonistic as they have always been.

In the second place, the producer of coal by being compelled to analyze his operating conditions should be better able to produce coal efficiently and relatively more cheaply, although I do not believe that coal will ever recede to the low prices at which it was formerly mined and sold. No business of the magnitude of the coal business has ever been so disorganized prior to war conditions as was the coal business, but one of the very things sought to be accomplished for years has come to pass; namely, the formation of a National Coal Association, which had been tried many times in the past but always failed due to the fear of the Sherman law. People have become so accustomed to thinking in billions that combinations in the future will not nearly have the same frightfulness that has been true in the past. Under war conditions and sometimes under compulsion, labor and capital have come closer together and each side has learned many of the inner secrets of the other, so that there should be less distrust in the future than there has been in the past. Frightful, therefore, as is the war, I believe its effect on the coal industry will be a beneficial one.

New Bulletin for Large Coal Users

At this time, when fuel engineers and manufacturers are deeply interested in the conservation of fuel in order that those industries essential to winning the war may not be handicapped, they will welcome a publication just issued by the Bureau of Mines of the Department of the Interior, giving thousands of analyses of coals from many hundred mines in the United States, for these analyses enable the users of coal to realize the amount of heat they are buying.

Bulletin 123, "Analyses of Mine and Car Samples of Coal Collected in the Fiscal Years 1913 to 1916," is a continuation of the sampling and analyzing of the coals of the country begun by the Federal Government in 1904. It is the third of the series, Bulletin 22, "Analyses of Coals in the United States," which can now only be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 85c., being the first. The second bulletin of the series, Bulletin 85, "Analyses of Mine and Car Samples of Coal Collected in the Fiscal Years 1911 to 1913," is still available for distribution by the Bureau of Mines.

The present bulletin presents analyses and descriptions of samples collected during the fiscal years 1913 to 1916. In order that the material in this bulletin may be used to supplement that presented in Bulletins 22 and 85, the same plan of geographical classification has been followed, the analyses and descriptions of the samples being grouped in alphabetical order according to the state, county and town near which the mines or prospects sampled are situated.

The three bulletins, which do not conflict, constitute an extensive analyses of the coals of the United States and should prove of great value to those who purchase large quantities of coal. The day has passed when the industries buy coal as coal. They now buy heat units and know what they are buying. Bulletin 123 is of no particular interest to the domestic consumer of coal. It is for the industries that require large quantities of coal and to whom the cost of coal now is an increasingly large factor in the conduct of their works.

Copies of Bulletin 123 may be obtained free of charge by addressing the Director of the Bureau of Mines, Washington, D. C., as long as the present edition remains.

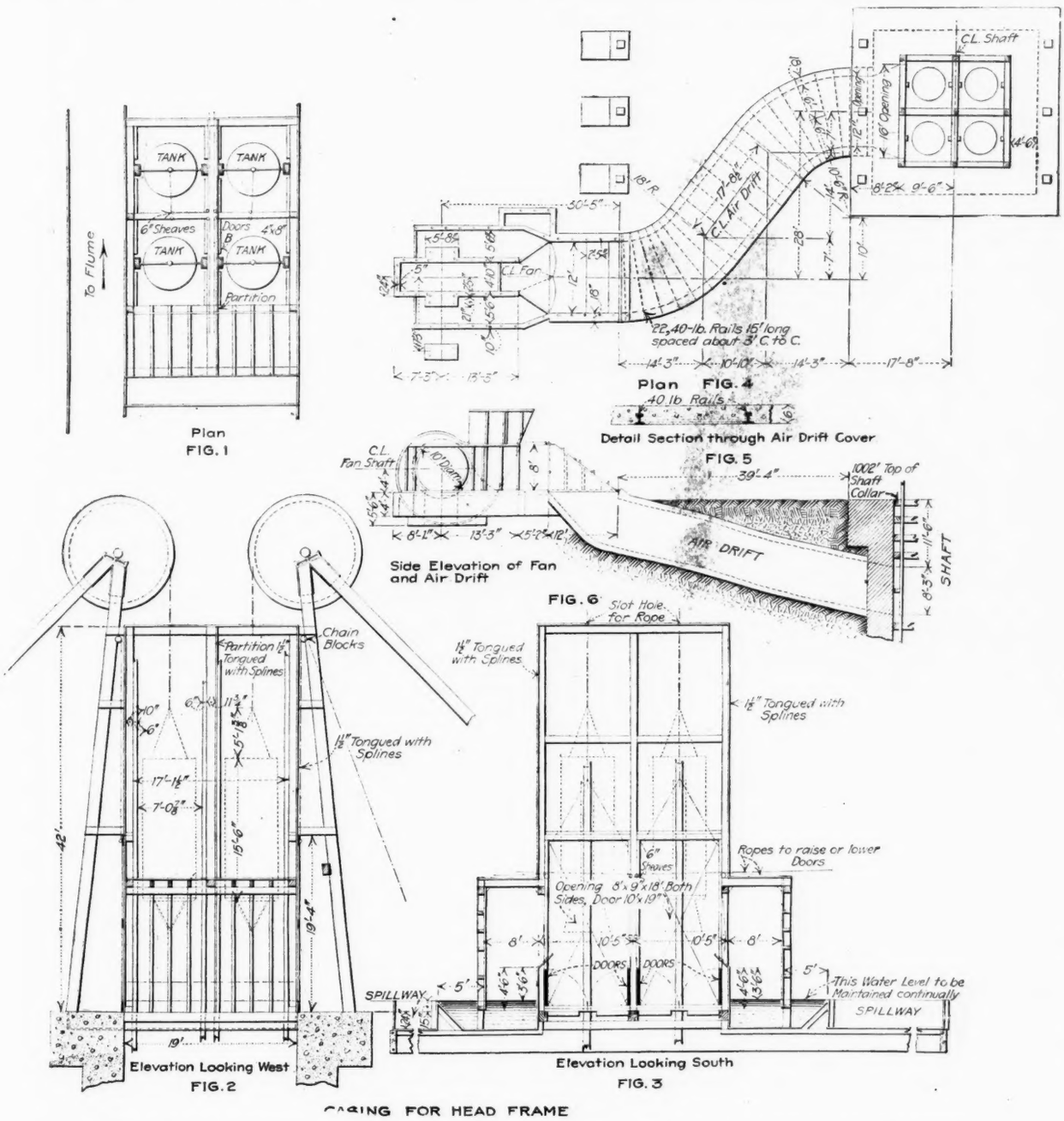
Legal Department

KENTUCKY MINE PROP LAW — In affirming judgment against defendant mining company for death of a miner caused by a fall of slate at a place where he and his buddy were engaged in drawing pillars, the following points were decided by the Kentucky Court of Appeals, in the case of Kirk vs. Borderland Coal Co., 203 Southwestern Reporter, 534. The Kentucky statute, providing that "every workman in need of props, cap pieces and timbers shall notify the mine foreman or an assistant mine foreman, or any other person delegated by the mine foreman, of the fact at least one day in advance, giving the number, size and length," etc., applies only to those miners who are charged with the duty of propping. The custom of a mine may be proved for the purpose of showing upon whom the duty of propping devolved. Even if the company's rules purport to require every miner to do his own propping, waiver of the rule in general practice may be proved. When a coal operator designates employees to do necessary propping, such employees become representatives of the operator for that purpose and their negligence is actionable negligence of the operator, if it results in injury to other miners. Where a miner is assured by one in authority that a given place of work is safe, the miner may continue at work there without assuming the risk of being injured through the existence of some dangerous condition negligently permitted by his employer to exist. Such assurance may be given in implied, as well as express, terms. Hence statement by a timberman to a miner, "All right, so long," may be found to have been an assurance to the miner that a place which it was the timberman's duty to prop, if propping was reasonably necessary, was safe.

Shaft for Water Hoisting and Ventilation

ABOUT halfway between Lansford and Tamaqua, Penn., on Locust Mountain, there is a unique installation at shaft No. 10 of the Greenwood colliery of the Lehigh Coal and Navigation Co. It is known locally as a "water seal"—a scheme which permits of the same shaft being used both for ventilation and water hoisting. The combining of the two functions—ventilation and hoisting of materials such as water, coal, etc.—has been practiced on the continent of Europe for some time, but as far as known the first application in the United States is at the Greenwood shaft of the Lehigh Coal and Navigation Co. The Greenwood colliery is in the Panther Creek Valley, about three miles west of Lansford. The workings are on the north side of the valley, mainly in the south dip seams. It is interesting to note the development at this old operation. It was first opened up in 1860 by a water-level tunnel which cut the Primrose bed and the Mammoth seam in two places.

In the early days of mining in the Panther Creek Valley, the coal was started on its way to market over planes and gravity roads, and thence by water transportation to its destination. The coal from the Greenwood tunnel in 1860 was transported to Coaldale to the foot of No. 2 plane; it was hoisted up this plane and then run by gravity one mile east to the foot of No. 1



FIGS. 1 TO 6. DETAILS OF WATER SEAL AND FAN AT SHAFT NO. 10, GREENWOOD COLLIERY

plane; after being hoisted up this latter plane to Summit Hill, the coal was run by gravity on a railroad to Mauch Chunk, where it was loaded into boats and shipped to market via the Lehigh Canal. In the '60's railroad transportation was not carried on by means of 100,000-lb. capacity steel hopper cars equipped with Westinghouse air brakes. The little 5-ton wooden "jimmies" with their hand brakes were the terror of railroad officials. It often seemed as though they did not wait for even a legitimate excuse to leave the rails, and wrecks were common occurrences.

The gravity road from Summit Hill to the Lehigh Canal and the planes used to transport the empties back to Summit Hill have long outlived their usefulness as part of a coal-transportation system, but as the switchback of today contribute to the pleasure of tourists. The old method of transportation gave way in 1872 to

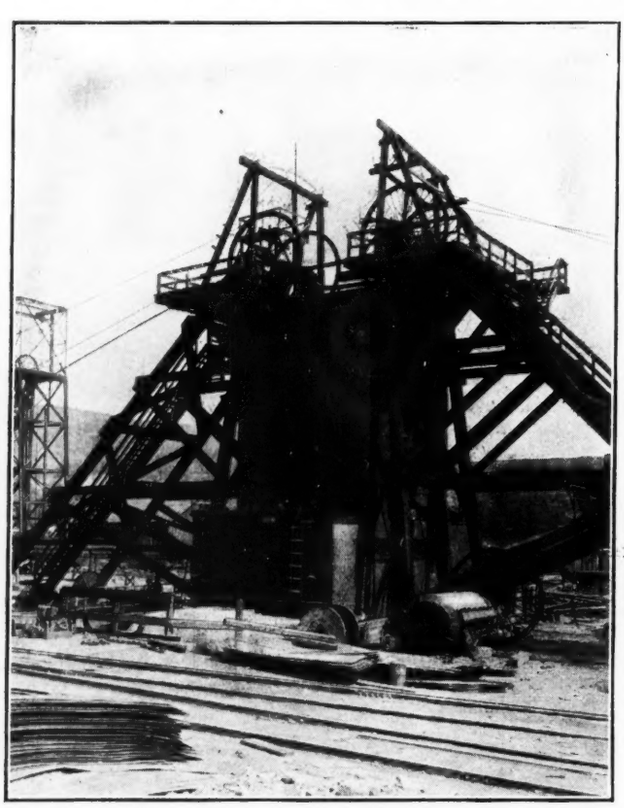


FIG. 7. HEADFRAME AND WATER SEAL AT SHAFT NO. 10

the one in vogue at the present time; the Locust Mountain was tunnelled by the Lehigh Coal and Navigation Co. at Lansford, and thenceforth coal from the Panther Creek Valley went to market by rail via the Nesquehoning Valley to Mauch Chunk, where it reached the main line of the railroad, since leased to the Central Railroad of New Jersey.

Continuing the description of the development of the Greenwood colliery, in 1870 a slope was sunk 250 ft. in the Mammoth seam from the water level; in 1880 the slope was extended 250 ft. for a new lift. A coal shaft was sunk in 1905 to develop a new level below the slope workings; and two years ago another shaft was sunk to open up a new level under the old shaft level. When the slope was sunk in 1870, engines, boilers and a fan were placed on the mountain back of the outcrop of the Mammoth seam.

In 1904 a new breaker was built at the Greenwood mines; a boiler house was erected having in mind utilizing the steam from this plant for power for the breaker and for a proposed water shaft which was started the following year. The boiler house on the mountain was now abandoned and a 2200-ft. steam line was established to operate the engines and fan at the Mammoth outcrop. The water shaft, which was sunk in 1905 to a depth of 620 ft., has four compartments; four water tanks are operated in the shaft by two pairs of engines, one pair on either side of the shaft, as indicated in Fig. 7.

In 1914 the slope workings were robbed out, the slope was abandoned and the engines were utilized to sink a new shaft. Various complications connected with the old ventilating system at the Greenwood colliery made it necessary to revise the method of ventilation and erect a new fan. After considerable discussion it was decided to utilize the water shaft and make it do double duty for air and water rather than to sink a new air shaft at a cost of $60,000. The available area of the water shaft is 256 sq.ft. As 3000-gal. tanks were to be used of a diameter of 5 ft. 10¼ in., the horizontal area of the four tanks would amount to 107.5 sq.ft. Thus, after subtracting the area of the four tanks, 148.5 sq.ft. horizontal shaft area would be left available for ventilation. Then it was a question whether the tanks, when in operation, would have any detrimental effect on the air current. On account of the large area available it was decided that they would not seriously interfere with the ventilation. Since the fan has been in operation a test showed that this conclusion was justified.

The Greenwood colliery is a prominent operation in the Panther Creek Valley, and its name lends selling power to the coal of the Lehigh Coal and Navigation Co. "Summit," "Greenwood" and "Old Company's Lehigh" are well-known trade names. The boiler plant at this mine stands out prominently on the mountain side. Its 16 stacks indicate its size and bespeak the power required to carry on the various operations connected with the mining and preparation of the Greenwood coal. This boiler plant is shown at the right of Fig. 8. The headframe of the water hoists is in the center, and the new fan and its engine house are prominent in the foreground. The top of the Greenwood breaker shows immediately to the left of the boiler-house stacks.

Like many effective operations, the idea embodied in the water seal and also its construction is extremely simple. The principal problem in the case in question was to make a water seal which would permit of delivering water through it from the 3000-gal. tanks without disturbing the ventilation. The solution of this problem as worked out by the Lehigh Coal and Navigation Co. has proved to be a complete success, and the construction details are given in the accompanying illustrations.

In Fig. 3 is shown a cross-section through the shaft and the water seals, one on either side of the shaft. To permit of handling the tanks without disturbing the ventilation, the shaft was practically extended by a casing 42 ft. above the headframe foundations. This casing is built of 1½-in. boards tongued with splines (similar to tongued and grooved). Excess height is

provided in this casing to allow for ample space in which to handle the tanks at the discharging stage of their operation. In the cross-section (Fig. 3) the water tanks are shown dotted in their discharging position.

When the water leaves the 3000-gal. steel tanks it flows into the wooden tanks at the side of the shaft, overflows from them to a spillway and is carried off by a flume to a near-by reservoir. One end of these wooden tanks is included in an extension of the shaft casing, part of which drops about 1 ft. below the ordinary level of the water, thus acting as a seal or lock to the air in the shaft but permitting of free passage of water underneath. The hood over the shaft end of this wooden tank is shown in Fig. 7. In this illustration the water is welling out over the outside end of the wooden tank as a steel tank is discharging into the inside portion. It is an interesting sight.

Other features connected with the casing over the shaft include arrangements for opening it to remove the steel tanks for repairs or to do other necessary work in the casing while the fan is running. On both sides of the casing are 10 x 19-ft. vertical doors through which the tanks may be removed. When these outside doors are to be opened the top of the shaft is first closed by dropping another set of doors which prevent disturbance to ventilation. A vertical partition in the center of the shaft top casing permits of one hoist being operated while the other is being repaired.

Closely associated with the water hoists at shaft No. 10 is the fan and the method of ventilating the Greenwood workings through the same shaft. At the time plans were being considered for unwatering and ventilating this mine, a ventilating system was projected which showed the proposed workings of the entire mine, noting sizes of all airways, gangways, overcasts, etc. The resistance was calculated for the conditions which would exist when the development work had reached the point where the maximum resistance would be encountered. The number of men that would be employed in the mine was estimated, also the number of splits, and the number of men that would probably be employed on each split.

Thus in this manner it was ascertained that conditions would require a fan with a capacity of about 200,000 cu.ft. of air per minute. The Jeffrey Manufacturing Co., of Columbus, Ohio, furnished a fan which met the necessary requirements. Its normal capacity was 200,000 cu.ft. per minute at 170 r.p.m. and 125 brake-horsepower. The reversing mechanism of the steel fan included steel reversing doors for the chimney, hinged to its front and provided with the usual operating parts. The casing was also provided with all necessary side drift reversing doors. The fan was constructed of $\frac{3}{16}$-in. steel plate and a steel chimney with 110 sq.ft. area. The fan gives the following results according to the various speeds of the operating engine:

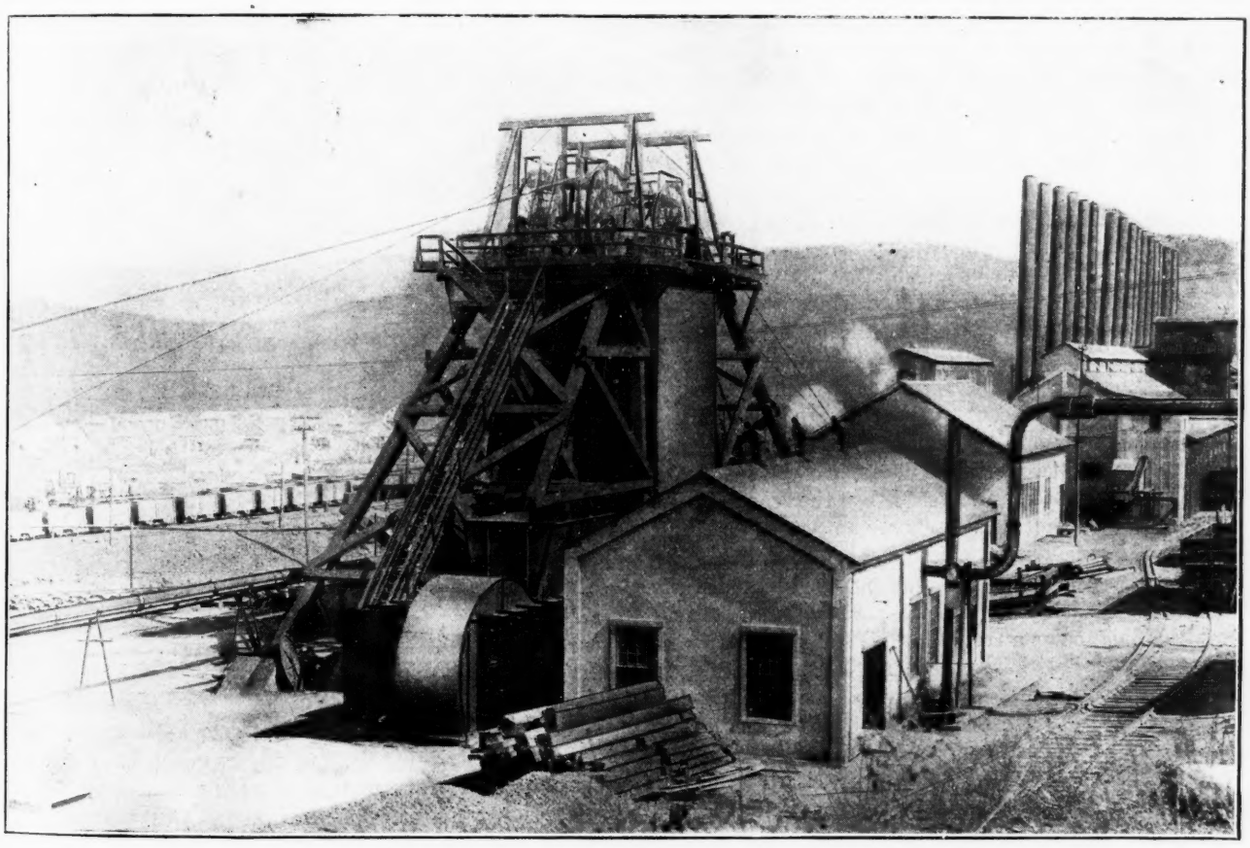


FIG. 8. HEADFRAME AND WATER SEAL, ALSO OTHER PLANT AT GREENWOOD COLLIERY

R.p.m.	Volume, Cu.ft.	Gage, In.	Brake-Horsepower
170	200,000	3.00	125
128	150,000	1.70	54
86	100,000	0.75	16
44	50,000	0.20	4

An interesting test was made in connection with shaft No. 10 with which this fan is connected. Meas-

urements of air were taken when water was being hoisted up the shaft and again when the tanks were not in motion. When hoisting water, the area of the main airway inside equals 11.5 × 7 = 80.5 sq.ft. The velocity of the air equals 1705 ft. per minute, which gives 137,252 cu.ft. per minute. When not hoisting water, the velocity of the air equals 1770. These conditions give 142,485 cu.ft. per minute. The water gage at the fan was 2.8 in. and the speed of the engine 86 r.p.m. Thus it is seen that the operation of the tanks in the shaft does not have a very detrimental effect on the air currents, due chiefly to the large shaft area. Normally the fan is run exhaust, as the workings in parts of the Greenwood mines are very gassy.

A general view of the fan and its engine house is given in Fig. 8; the details of construction of the fan and drift are shown in Figs. 4, 5 and 6. In locating the fan it was placed on the north side of and 28 ft. west of the center line of the shaft, so as not to interfere with the piers for the shaft headframe. Connection with the shaft was made by a concrete conduit 12 ft. wide and 8 ft. high, giving an area of 96 ft. The fanhouse was constructed of hollow tile plastered with cement. The roof was made of protected corrugated steel. Thus fireproof construction was used throughout.

It would be interesting to see how the air-lock scheme would work out when applied to a shaft through which coal is hoisted and which is also used for ventilation. It has been worked out in practice in Europe and might readily be accomplished by having the top of the shaft housed in similar to the method at the Greenwood colliery. Instead of having the mine car discharge inside the housing the cage could pass through an air lock and the coal be dumped outside. This air lock might be equipped with two sets of doors, capable of being automatically opened and closed by the cage in its passage through the lock. When one set of doors is open the other should be closed.

Naturally, a scheme of the kind outlined would likely only find application in special cases similar to the proposition which confronted the Lehigh Coal and Navigation Co. at its No. 10 shaft. In the case in question a considerable saving was effected by using a shaft already sunk for both ventilation and water hoisting. In planning a new operation, where two openings to a mine are required by law, it is questionable whether the air-lock scheme would often be advocated. In a number of drift mines in bituminous regions, especially before development is well under way, a similar plan is frequently used, for a time at least. In this case the fan may be placed at the mine mouth of a double-entry system; the air travels in in one entry and out the other. The return airway is used as a haulageway until within a thousand feet or so of the mine mouth, when a change is made to the intake. A trip of cars in passing out of the mine goes through an air lock, thus not interfering with the ventilation.

George W. Wickersham, former Attorney General of the United States, says: "Business as usual means waste as usual."

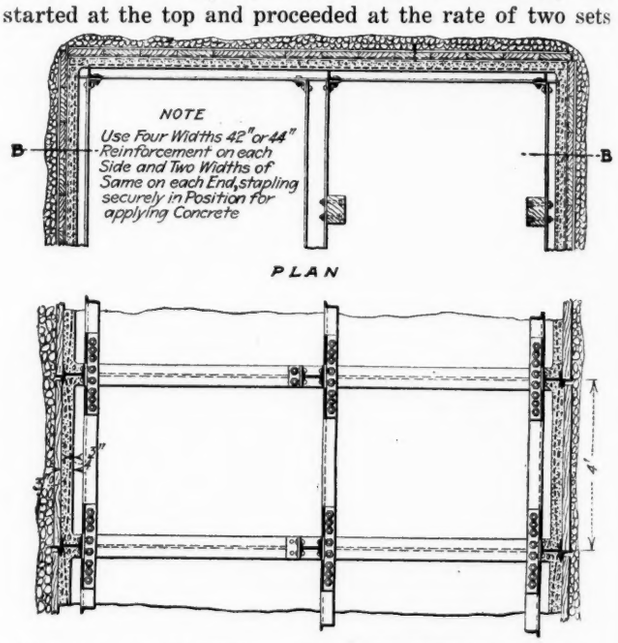
Thrive by thrift.
Make thrift your buy-word.
Buy War Savings Stamps.

Relined a Mine Shaft with Cement Gun

During the past four years, ten mine shafts on the Iron Ridge in Minnesota have been relined with precast concrete lumber. In many others monolith concrete has been used. Recently the cement gun has been employed to reline the Penobscot pump shaft of the Oliver Iron Mining Co., at Hibbing. This shaft, lined with steel sets and 2-in. wood plank, was sunk in 1911. It was finished in 1912, reaching a depth of 231 ft. All the water from the Hull-Rust pit, one of the largest open-pit mines in the world, is pumped out through this shaft. Originally the pumps handled 1000 gal. a minute, but now the discharge is only 400 gal. in the same time.

The shaft is about 11½ x 6 ft., with two compartments 5½ x 6 ft. The steel sets are made up of 6-in. beams of H-section and the buntons are 6-in. I-beams. The sets are spaced on 4-ft. centers.

The work of repair, which is to be described, was started at the top and proceeded at the rate of two sets


NOTE
Use Four Widths 42" or 44" Reinforcement on each Side and Two Widths of Same on each End, stapling securely in Position for applying Concrete
B
B
PLAN

METHOD OF FASTENING REINFORCEMENT STEEL—SECTION B-B

per day, a daily advance of 8 ft. Concrete was placed over the wood lining in two layers, each 2 in. thick. Sollars or temporary platforms were put in every 15 to 20 ft. in order to prevent the sand from the cement gun from dropping down the shaft, and also to prevent accidents from falling materials. The shaft ladders were removed as the work proceeded, in order to give the men sufficient operating room. The sets were concreted in order, except those at which the sollars had been placed. After the concrete had hardened in the sets above and below the sollar sets, the sollar was removed and the set on which it rested was concreted.

Before, however, the cement-gun work was started, reinforcing was placed all the way down the shaft. This was wire mesh, cut into lengths of 4 ft., so that when placed between the sets it would curve out, forming tension reinforcement near the interior face. To hold the reinforcement in place hook spikes made from ½-in. rods were driven into the timbers, close to the sets. The sand and cement as mixed in the cement gun was fed to the nozzle through a 1¼-in. hose. Wear on the

rubber connections from the gun to the delivery hose made it necessary to replace these connections several times. Otherwise no repairs were needed. Six men were employed besides the foreman, who gave only a part of his time to this job. Three men measured the sand and cement, mixed the materials and carried the mixture to the cement gun. One man attended to the gun and two men were down in the shaft handling the nozzle. While one was busy with the nozzle the other would be trimming. Sand was obtained from a bed in an open-pit mine and brought to the job in 7-yd. wooden dump cars, being screened through ¼-in. mesh and dried with steam coils.

Though the workmen had no experience to begin with, they were of an intelligent laboring class and were able to do the work satisfactorily after a little training. For a 10-hour day the ordinary work of six men was three sets or 12 ft., applying a layer of one coat 2 in. thick. The best results were obtained when the sand was thoroughly dried and mixed with the cement before being placed in the cement gun, and batches of 1 to 1½ cu.ft. were handled by the gun much more satisfactorily than larger batches. With these precautions the flow to the hose could easily be regulated, making it possible to place the concrete smoothly on the walls of the shaft.

Sand was heated in a specially built drier seven coils wide and seven coils high and 12 ft. long, made of 1½-in. pipe. It would sift down through these coils and be perfectly dry when it reached the bottom. A double ¼-in. mesh screen, placed on a slant, was used directly above the coils. Experience with this improvised drier showed that it would have been more efficient if the pipes had been shorter. Steam was obtained from the stationary plant at Penobscot mine, while the air used in operating the gun was furnished by a Westinghouse air pump, furnishing about 220 cu.ft. a minute, carrying 70 lb. pressure. At the nozzle the air pressure was from 20 to 22 lb., and water pressure 100 pounds.

In experimenting it was found that if the sand and cement were placed in the gun separately and then mixed, there was much waste material from the rebound when the concrete was shot on the wall. After the dried sand and cement were mixed before being put into the gun, this waste material decreased materially.

Sollars were put in every three or four sets and were cleaned every day. They were made of 2-in. plank and extended 4 in. on either side of the compartment and so could not slide out of place. At the end of each day's work the hoses, nozzles and gun were completely cleaned.

After the shaft was lined the water gave no further trouble, and the mine officials were so well pleased that they decided to use the cement gun in pointing up joints in the Philbin shaft where precast lumber has been used for the lining. Before treatment water was seeping into the shaft below the 75-ft. level, but this was stopped by a single coat of cement-gun concrete.—*Engineering News-Record.*

Liquid fuel has a simple molecular structure, and the ease with which the light oils are changed to vapor make these oils readily adaptable to many purposes for which gas is used.

Record July Shipments of Anthracite

The shipments of anthracite for July, as reported to the Anthracite Bureau of Information at Philadelphia, show gratifying increases both over June of this year and over July, 1917. The record for last month was 7,084,775 gross tons, against 6,867,669 tons in June, and 6,724,252 tons in July of last year, the increases being respectively 217,106 tons and 360,523 tons. The shipments in July were the largest ever made in that month in the history of the industry, and have been exceeded only twice—in March of this year when they amounted to 7,276,777 tons, and in October, 1917, when they were 7,110,950 tons. The total shipments for the first four months of the present coal year—April to July, inclusive—have amounted to 27,208,073 tons against 26,283,113 tons for the same period of 1917.

Not the least gratifying showing in the returns for last month is a substantial increase in the output of domestic sizes, which in the earlier months of the year had shown a relative decline. The shipments of domestic sizes, including pea coal, in July were 4,634,651 tons, an increase of 135,675 tons over the preceding month. In fact, more than 60 per cent. of the total increase was in the domestic sizes of coal. The shipments by railroads were as follows:

	July, 1918	July, 1917	Coal Year, 1918	Coal Year, 1917
P. & R. Ry	1,420,624	1,256,316	5,356,093	4,943,301
L. V. R.R.	1,319,731	1,254,647	5,176,042	4,866,238
C. R.R. of N. J.	641,547	603,704	2,359,412	2,379,374
D. L. & W. R.R.	1,034,561	1,052,944	4,095,620	4,122,123
D. & H. Co.	820,530	758,695	3,191,764	2,990,805
Penna. R.R.	504,630	510,941	1,929,121	1,942,344
Erie R.R.	824,242	768,245	3,037,121	3,026,896
N. Y. O. & W. Ry.	167,656	168,915	717,326	675,445
L. & N. E. R.R.	351,254	349,845	1,345,574	1,336,587
	7,084,775	6,724,252	27,208,073	26,283,113

Molecular Consistency of Gases

According to the kinetic theory, gases consist of freely moving molecules. The contacts or collisions among molecules of different nature produce chemical action. Therefore for complete combustion to take place in the mixture of gases, each molecule of the combustible must come in contact with the number of oxygen molecules required to burn it. The concentration or number of molecules of combustible gas and oxygen in a unit volume will influence the number of collisions taking place. According to the law of mass action, the velocity of a chemical reaction in the combustion process is proportional to the products of the concentrations of the oxygen and the combustible substances; that is, if one molecule of substance A reacts with one molecule of substance B the velocity of the reaction at any moment is proportional to the product of the number of molecules of A and B present in unit volume. If several molecules of one substance are taking part in the reaction, the concentration of that substance must be raised to the corresponding power. Thus if one molecule of substance A reacts with two molecules of substance C the velocity of the reaction will be proportional to the number of molecules of substance A in unit volume multiplied by the square of the number of molecules of substance C in unit volume. Thus it can be said that the velocity of a chemical reaction increases when the concentration of the reacting substances increases.

DEPARTMENT OF HUMAN INTEREST

Eye Hazard in Coal Mining

The bulletin of the Pennsylvania Department of Labor and Industry, Vol. IV, Series of 1917, No. 7, gives the following information regarding eye accidents in the anthracite and bituminous coal industries of Pennsylvania. The classification forms are prepared for ordinary industrial accidents, consequently some of the subdivisions seem awkward to a mining engineer:

Cause of Accident	Eyes Lost Anthracite	Eyes Lost Bituminous	Other Compensable Accidents Anthracite	Other Compensable Accidents Bituminous	Non-compensable Accidents Anthracite	Non-compensable Accidents Bituminous
Machinery						
Boiler, steam pipes, etc.						1
Transmission apparatus					1	
Adjusting machine or work						1
Operating and feeding						1
Oiling					1	
Cleaning					1	
Repairing				1	1	1
Breaking of machine or work				1	2	2
Flying objects	1	1	7	7	74	39
Explosives, electricity, fires, hot and corrosive substances						
Corrosive substances			4	3	15	16
Electricity	1		1	2	9	28
Explosives	11	10	19	16	9	7
Hot substances and flames			2	4	21	21
Conflagration						1
Falling objects						
Rock and earth	3	4	50	76	119	251
Dropped by other persons					2	
Falling from trucks and vehicles						1
All others			3	7	13	12
Fall of persons						
From ladder						1
From scaffolds or platforms			1	1	1	
From vehicles						1
From other elevations					1	
Into openings other than excavations					2	1
On level			2	2	14	5
Handling of tools and objects						
Tools in hands of injured persons	1	3	2	14	21	32
Tools in hands of fellow workmen		2		2	3	4
Handling sharp objects			1			
Loading and unloading			1		8	6
Carrying and lifting objects (not loading or unloading)				1	2	7
All others			1	2	9	12
Power vehicles on track						
Coupling or uncoupling cars					1	1
Defective equipment						1
Fell from, over or into			1		1	3
Loading or unloading material			3		11	6
Struck by car or engine			1	1	1	
Struck by overhead or side obstruction				2	2	2
Collisions				2	1	4
Derailments and replacing cars				2		8
Miscellaneous						
Stepping on nails				1		1
Running into or striking against objects			4	4	21	17
Poisonous substances		2		2		1
Flying objects (not from machines, etc.)	39	41	257	279	751	956
Animals	1	2	4	7	12	6
Intentional violence		1		1	3	3
All others		1	2	3	5	4
Total	57	67	366	443	1,138	1,514

Looking over these figures we soon see that the larger number of accidents are from falling objects (rock and earth) and from flying objects (not from machines, etc.). The number of these accidents seems to suggest the use of goggles by miners. There were 7 eyes lost, 126 compensable accidents and 370 noncompensable accidents from falling rock and earth, while there were 80 eyes lost, 536 compensable accidents and 1707 noncompensable accidents from flying objects (not from machines).

In view of the small number of men engaged in machine shops around the mines the number injured shows that the hazards are great. The three causes "tools in hand of injured persons," "tools in hand of fellow workman" and "handling sharp objects" explain 6 lost eyes, 19 compensable accidents and 60 noncompensable. Those eye accidents to miners and shop workers which may be avoided by the use of goggles can roughly be computed by adding together the accidents, compensable and noncompensable, from falling rock and earth, from flying objects (not from machines) and from tools. The number of eyes lost thus totaled was 93 out of 124. The compensable accidents amounted to 680 accidents out of 809 accidents to the eyes. The noncompensable accidents account for 2137 out of 2652. Thus the eye hazard would be almost entirely avoided if protection for the eyes were provided for these two classes of men.

The following estimate has been made by F. H. Trego, of the Mine Safety Appliances Co., of the losses due to the eye hazard in the Pennsylvania anthracite mines during 1916, based on these figures:

57 lost eyes at $1,675 per eye	$95,475
366 compensable eye accidents including medical attention at $75 per accident	27,450
1138 noncompensable eye accidents, including time lost and medical attention at $18.93 per accident	21,542
Total	$144,467

The loss from the eye hazard at the bituminous mines of Pennsylvania during 1916 is figured as follows:

67 lost eyes at $1,675 per eye	$112,225
443 compensable eye accidents, including lost time and medical attention at $75 per accident	33,225
1948 noncompensable eye accidents, including lost time and medical attention at $22.16	43,168
Total	$184,410

The figures for lost time and medical attention in noncompensable accidents are based on the average experience for all noncompensable accidents of the year 1916 in the State of Pennsylvania. According to this method of calculation the number of days lost in the Pennsylvania anthracite mines for noncompensable eye accidents would be 6475 or 5.69 days per accident; in the Pennsylvania bituminous mines it would be 12,311, or 6.32 days per accident, if the severity of noncompensable eye accidents is equal to the severity of all noncompensable accidents at Pennsylvania mines of like character.

Buried Under Rock and Yet Lives

BY E. H. GRAHAM

It happened within the past month. He was an inspector who, desiring to get a quick fall of roof in a worked-out place, seized an ax and began chopping one of the few remaining timbers. The miners, having recovered the pillar, had removed all the timbers that could be recovered with perfect safety. They warned

our friend that he was in danger, that what he was attempting was unnecessary as the roof would break the remaining timbers in a short time and thus give the desired fall, but impatient and overconfident he chopped away until a piece of slate became dislodged and caught him, pinning him to the ground by his foot so that he could not extricate himself.

The one witness tried hard to release the victim, but the piece of slate was too heavy for him, so he ran for assistance. During his absence and before the rescue party could arrive, the thing expected by the miners happened—the roof fell, more than 15 tons of it, carrying with it the remaining timbers. When the rescue party arrived, they saw a mass of rock and slate 6 ft. in height, but no inspector. The work of search was immediately begun and after four hours of the hardest and fastest kind of work they came upon the body, which they discovered had been entirely entombed by the mass of rock and slate.

And here a miracle—the supposed victim was not injured at all. Providence is kind at times, even to the foolish.

When the roof fell two of the large timbers, which came with it, fell one on either side of the prostrate inspector, and by some unaccountable combination of circumstances large pieces of slate and rock supported by these timbers took the weight of the entire fall, leaving the man unhurt. This accident without doubt illustrates just what has been the cause many times of fatal roof falls; only in those cases the man did not escape, and so no one has been able to tell just how the accident occurred.

Recovering timbers from worked-out places need not of necessity be a dangerous undertaking, if only experienced men do the work, and they do it with a liberal factor of safety. In the case cited all the timbers that could be safely removed had been recovered. The accident was due to the impatience of the inspector in his desire to hurry the fall.

Occasion may arise when it is desirable to cause a fall without waiting for nature to do its work. If so, a half stick of Monobel lashed to the timber will break it, or better still a hole can be drilled at an angle near the foot of a prop so as to terminate under it. By loading and firing this shot, the prop will be safely dislodged. This accident could have been avoided by either of these means. The miracle by which our friend escaped gave us valuable information, and from this recital of it all should profit

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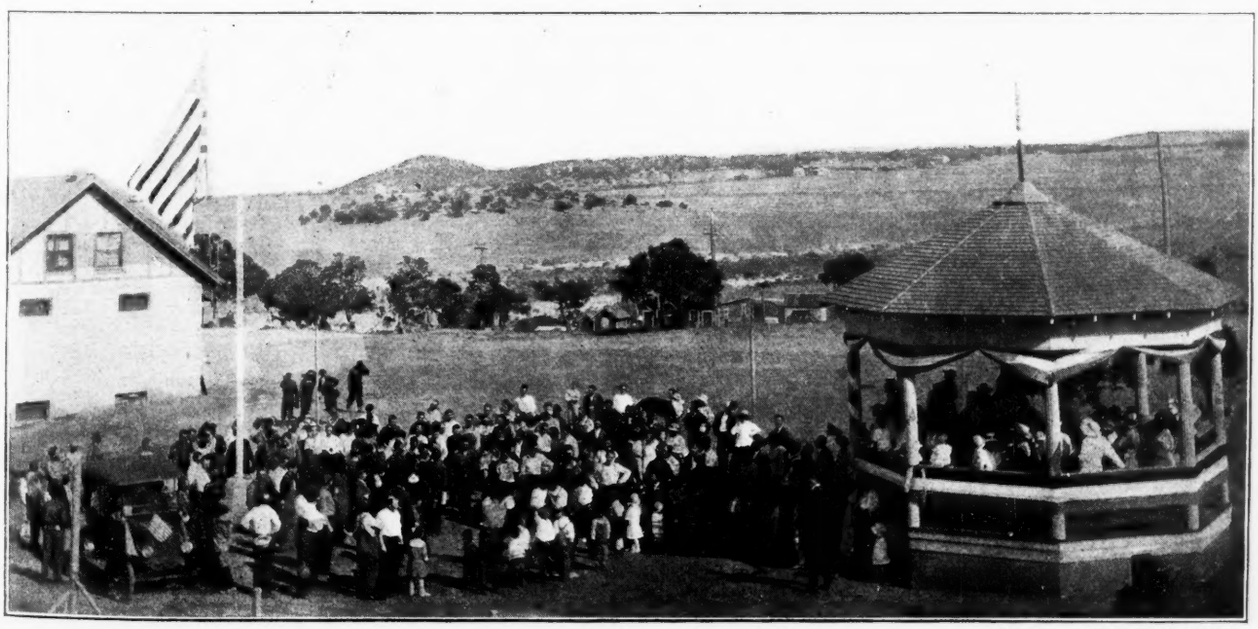
Patriotism and Cold Cash—The coal miners of the Colorado Fuel and Iron Co. have subscribed for $300,000 of War Savings Stamps and $67,000 to the Second War Fund of the American Red Cross. At Frederick alone, $30,000 worth of stamps were subscribed for. The Liberty Loan campaign also was most successful in interesting the mine workers. At Sopris the senior Red Cross organization has furnished 476 garments for refugees and the Italian women have started a knitting class.

COLORADO will soon have to give up the use of the word "camp" and call its mining villages "towns," so old-world are its activities and permanent its homes. One illustration shows a colored Red Cross chapter in session at Lester, and another a flag-raising at Cameron. Both "camps" are owned by the Colorado Fuel and Iron Company.

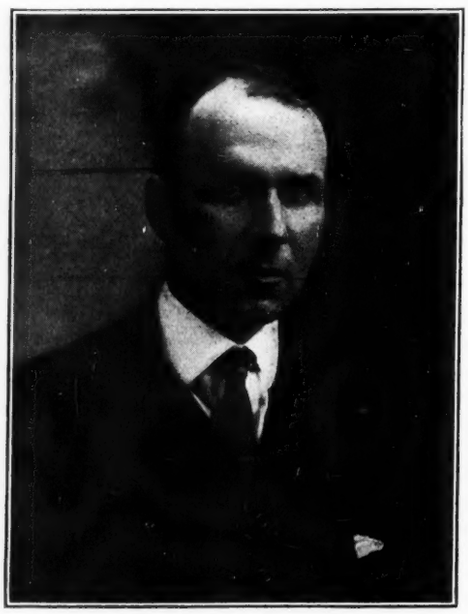


Courtesy of C. F. & I. Bulletin.

Who's Who In Coal Mining

Joseph Gardner Bradley

If there is one trait which Joseph Gardner Bradley, chairman of the executive committee of the West Virginia Coal Association and incidentally president of the Elk River Coal and Lumber Co., possesses to an eminent degree it is his broad-mindedness—his ability, if you please, to see both sides of a question—and to realize the viewpoint of others. In short, his is a mind which perceives actualities. It will thus be easy for the reader to form some conception of how fortunate the West Virginia Coal Association was in securing a man of his caliber for its guiding genius although,



JOSEPH GARDNER BRADLEY
President of the Elk River Coal and Lumber Co. and Chairman of the Executive Committee of the West Virginia Coal Association

parenthetically speaking, Mr. Bradley is so innately modest that he would promptly enter a disclaimer to the statement that he was the guiding genius of anything, for the Association president is not a man who obtrudes himself anywhere yet whose personality and achievement have made him a recognized figure in West Virginia both in the public and industrial life of the state.

Mr. Bradley is not a native of West Virginia, but no man could have become more closely identified with the state in his 15 years of residence there, during which period he has entered actively into the life of the state, than J. G. Bradley. Antecedents do not always make the man, but if he is of the right material the character, mentality and ideals inherited from his progenitors are at least a foundation upon which to build, and it is at least interesting to trace a man's origin to see what he has made of his opportunity.

Joseph Gardner Bradley is a grandson of the late Joseph P. Bradley, Associate Justice of the United States Supreme Court, and of J. Donald Cameron, who was elected to succeed hs father, Simon Cameron, as a United States Senator from Pennsylvania.

A "September morn" in 1881 witnessed the advent of Joseph Bradley into this world at Newark, N. J., and it was at Mrs. Craven's School and the Newark Academy that he received his early education, later attending St. Mark's School at Southboro, Mass., in preparation for Harvard College where, after finishing his college course, he attended the Harvard Law School. To friends, however, Mr. Bradley has at times expressed the belief that his real education began 15 years ago on Buffalo Creek, West Virginia, and that his real education has been obtained there. If such be the case he has taken many degrees from the School of Experience, for he entered the employ of the Buffalo Creek & Gauley R. R. at Dundon, Clay County, West Virginia, as right-of-way agent. It was not long before he was promoted to be superintendent and in turn secretary and treasurer of that company, and then general manager, treasurer and president of the Elk River Coal and Lumber Co., which owns the Buffalo Creek & Gauley R. R. and 75,000 acres of coal and timber lands in Clay and Nicholas Counties, on which it has developed one of the best known fields of low sulphur gas coal. This it markets through offices in Columbus, Ohio, and Philadelphia, Penn., as "Dundon Coal," its coal operations being located at Widen, West Virginia, and its timber operations at Swandale, West Virginia.

Mr. Bradley has never failed to respond to any calls made upon him for public service and has given his time freely and willingly to such service, particularly since the United States entered the war, so much so in fact that the only home this hard-worked West Virginian has is on railroad trains. He has not sought office, but he was elected as a delegate from West Virginia to the Republican National Convention at Chicago in 1916.

Mr. Bradley had occasion not long ago to say in speaking of the aims of the West Virginia Coal Association: "It is interested in promoting close coöperation with the over-burdened State Department of Mines; in decreasing the hazards of the industry; in stabilizing it; in improving sanitation; promoting welfare work and seeing that it receives fair play. The West Virginia Coal Association has justified its existence in the past, and as time goes on and it continues to render service to both the industry and the community, new fields will open for its activities, for the day of collective industrial activity is rapidly approaching us; the markets of the world become open to the United States as they have never, save in theory, been before."

It is interesting to note that at the surface of the fuel bed the combustible gases represent 35 to 65 per cent. of the total heat value of the coal. This means that under ordinary operation of the side-feed furnace about one half of the total heat in the coal is developed in the fuel bed, the other half being developed in the combustion space. Among other factors, it depends upon the size of the combustion space how much of the 50 per cent. of heat left in the combustible rising from the fuel is developed.—*Bureau of Mines Bulletin No. 135.*

Storage Policy of Fuel Administration

Maximum limits of storage for bituminous coal have been ordered by the Fuel Administration as follows:

	—Steam Coal—			Byproduct and Gas Coal		
	Public Utilities, Days	Preferred Industries, Days	Non-Preferred Industries, Days	Byproduct and Gas Plants, Days	Preferred Industries, Days	Non-Preferred Industries, Days
Maine	120	90	30	120	90	0
Massachusetts, Vermont, New Hampshire, Northern New York	90	60	30	90	60	0
Connecticut, Rhode Island, Southern New York, New Jersey, Delaware, Eastern Pennsylvania	30	30	15	45	30	0
Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, Western Ohio	30	30	15	45	30	0
Western Pennsylvania, Western Virginia, Eastern Kentucky, Eastern Ohio	30	20	15	45	30	0
Lower Michigan	90	45	20	60	60	0
Illinois, Indiana, Missouri	...	..	..	60	60	0
Wisconsin, Minnesota, North Dakota, South Dakota, Upper Michigan	...	..	..	90	90	0

The policy of the Fuel Administration in the matter of storage was explained by Dr. Garfield as follows: "Coal in excess of that required for current operations shall be delivered to plants not on the Preference List of the War Industries Board only when it is not in demand for use before Apr. 1, 1919, by consumers on said list; namely, railroads, the Federal Government, states, counties, public utilities, retail dealers or manufacturing plants on the Preference List. In carrying out this policy, allowance shall be made for differences in distance from the mines and for differences in transportation conditions which may require more or less storage at the beginning of winter to insure uninterrupted operation until the following spring."

The committee which determined upon the storage periods was constituted as follows: Federal Fuel Administrators; W. B. Bryan, of Kentucky; Harry F. Bryd, of Virginia; Joseph H. Frantz, of Ohio; W. N. Fitzgerald, of Wisconsin, and James J. Storrow, of New England; together with J. D. A. Morrow, Director General of Distribution, and A. M. Ogle, Director of States Distribution. The committee submitted the following report:

It is understood that these limits are mandatory and each Fuel Administrator is expected to see that the different classes of consumers are not allowed to exceed these limits. At the same time, it is understood that particular cases may require special treatment by a State Fuel Administrator, either by way of granting more stocks of coal than are indicated by these limits, or by restricting them to a less supply than indicated by these limits.

Where a State Administrator decides that the maximum limit should be exceeded in a special case for some special reason, he shall have authority to grant a revocable increase in writing for a specific added number of days. The administrator shall report each such specific case in writing immediately to the United States Fuel Administration at Washington, which may in writing disapprove the extension granted by him. Otherwise, it shall stand subject to action of the State Fuel Administrator.

Any company or concern which is permitted under the zoning regulations now or hereafter in force, to obtain coal from Illinois, Indiana, western Kentucky, or from mines west of the Mississippi River, may retain such reserve stock of coal as it shall have on the effective date hereof, on condition that such company or concern shall thereafter use screenings or mine-run only, for its current necessities, and shall obtain such screenings or mine-run for current use only from such last mentioned fields.

Production Bureau of Fuel Administration Ready to Co-operate with Mine Owners

The Production Bureau of the Fuel Administration is equipped to look after the interests of the operators in reference to the draft, voluntary enlistment, solicitations from private labor agencies and their advertisements, and to help them to get labor through the Government labor agencies. Julian B. Huff is in charge of this work.

The bureau is also prepared to handle quickly and efficiently any matters which should come up before the Priorities Board. It is desirous of being of help to the operators in obtaining necessary material. R. A. Rainey and D. D. Bush are in charge of this work. It is also investigating and taking whatsoever steps seem wise in reference to picnics, fairs, carnivals and various other celebrations which would probably result in a loss of tonnage. A. C. Dodson is in charge of this work.

The bureau is also in position to furnish literature of various kinds in connection with coal production and to supply speakers. This matter of propaganda is in charge of W. E. E. Koepler. Questions of car supply and any general matters should be taken up with George C. Foedisch. C. E. Stuart is looking after central power plants from which the operators are purchasing power.

In coöperation with the National Coal Association, the Production Bureau of the Fuel Administration is taking a census of the requirements of the industry for the next eighteen months. In this way it is hoped to secure definite information as to the amount of supplies which the mines will require. With this information at hand, it will be possible to take steps to prevent an

under supply of any needed material. Owing to the shortage of steel every effort is being made to prevent any overproduction. For instance, only a sufficient number of mine rails will be rolled to meet actual needs. With greater difficulty being experienced each day in meeting the nation's steel requirements, every precaution will be taken to prevent the tying up of this much needed product in supplies not immediately needed.

At present there is a shortage in a number of steel products, due to erroneous estimates of the amounts needed. It is believed the census will enable a much more intelligent handling of the matter in the future.

Kentucky Prices Now Fixed

Kentucky coal fields have been divided into five districts by the Fuel Administration, and prices, without the wage increase, prescribed as follows: District No. 1—$1.90, $2.15, $1.80; District No. 2—$2.10, $2.35, $1.85; District No. 3—$2.55, $2.80, $2.30; District No. 4—$2.20, $2.45, $1.95; District No. 5—$2.20, $2.45, $1.95. These prices are for mine-run, prepared sizes and screenings.

Exceptions are made in the following cases: Blue Gem Coal Co., $3.35, $3.80 and $2.40; Wallan-Jellico Coal Co., $3.25, $3.50 and $2.50; Elkhorn City Coal Co. and Guthrie Coal Co., $2.55, $2.80 and $2.30.

Contingent Fee Covenant Not Applicable to Coal Industry

Since rules and regulations have been promulgated governing the distribution of coal and coke which bring sales agents under rigid control, the Attorney General has ruled that the contingent fee covenant which the President has ordered inserted in all Government contracts is not applicable to the coal industry. Dr. Garfield submitted the following questions in regard to the matter:

1. Where coal is purchased by a jobber from an operator at a price below the mine price fixed by the President or the United States Fuel Administrator, can such jobber sell such coal to the United States Government at the mine price so fixed? Of course, in the case of such a sale the jobber would be the "contractor" and not the operator, and it would appear that the profit realized by the jobber might not be construed as compensation paid by the operator to the jobber for the procurement of the contract.

2. Is the above provision intended to prevent an operator from employing a sales agent on sales of coal to the Government where such sales agent receives as compensation for his services either a fixed price per ton or a percentage of the selling price? In the determination of this question it should be borne in mind that many coal operators do not maintain their own sales departments but employ established distributors of coal to act as sales agents under term contracts, on which such sales agents undertake to sell the output or a given quantity of the operator's coal for a fixed or percentage compensation.

3. Is the above covenant to be construed to prevent any agency of the Government from employing a distributor of coal as purchasing agent and paying such agent the commission allowed by Rule 3 of the Rules and Regulations in reference to licenses contained in Publication 22, inclosed herewith?

4. Are contracts between coal operators and railroads to be construed as Government contracts so as to require the insertion therein of the covenant quoted above? In answering this question the fact should be considered that a very large percentage of coal purchased by railroads in the past has been purchased (a) at the Government price through jobbers, who in turn purchase from the operators below the Government price; (b) at the Government price from sales agents, who receive their compensation from the operators; (c) at the Government price through purchasing agents employed by the railroad and paid by the railroad the purchasing agent's commission permitted by the above-mentioned Rule 2.

The Attorney General's ruling is contained in a letter dated Aug. 19, which reads as follows:

I have before me your letter of July 20 on the subject of the covenant against contingent fee operators which the President has directed to be inserted in all Government contracts. You ask how far the requirement of the insertion of this covenant is to be observed in certain circumstances arising in the coal industry, and what its effect will be if so inserted. I have no hesitation in saying that the circumstances set forth in your first, third and fourth paragraphs are within neither the letter nor the spirit of the covenant.

In the second paragraph you ask, "Is the above provision intended to prevent an operator from employing a sales agent on sales of coal to the Government where such sales agent receives as compensation for his services either a fixed price per ton or a percentage of the selling price?"

The letter of the covenant and the President's request is broad enough unquestionably to include such a situation, but it is clear, when the attendant circumstances are considered, that the situation is not within the spirit either of the President's order or of the covenant. Rules and regulations have been promulgated relative to licenses for the distribution of coal and coke by which the compensation to be paid to sales agents is rigidly controlled. Manifestly, it was not the intention of the President in requesting the insertion of this covenant to modify the policy or affect these rules and regulations. The situation in the coal industry is, therefore, outside the mischief which the covenant was intended to cure, and unquestionably outside the President's intent.

It is my opinion, therefore, that the covenant has no relation to any of the situations set forth in your letter.

Prices Announced for Alabama Coal

Prices covering operations in Alabama have been announced by the Fuel Administration. The determination of these prices has required arduous work and has been established on seams rather than by districts. The prices for run-of-mine, prepared sizes and screenings respectively are as follows: Big Seam group, $2, $2.30 and $1.95; Cahaba group, $3, $3.30 and $2.65; Pratt group, $2.40, $2.60 and $2; Helena and Harkness seams, $2.45, $2.75 and $2.25; Climax seam, $4.15, $4.40 and $2.05. The prices do not include the 45c. which may be added by those conforming to the Washington wage agreement.

Assistant Fuel Administrator Appointed for New York State

Delos W. Cooke, fuel administrator for New York State, has announced the appointment of Mercer P. Moseley as assistant fuel administrator. Mr. Moseley, who was born in Pamplin, Va., 37 years ago, is vice president of the American Exchange National Bank. He was at one time president and publisher of the *New York Commercial*. Mr. Moseley is a member of the Bankers' Club, Richmond County Country Club and a trustee of the Staten Island Hospital.

The offices of Mr. Cooke will be removed about Sept. 1 from 61 Broadway to Fifth Avenue and 21st Street.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

The continued fall in the tonnage week by week has been extremely disconcerting, the only glint of satisfaction being that it occurred in like measure last year and then came to an end before the close of September. If the parallelism between this year and last continues we may look for the maintenance of the present tonnage till the winter arrives.

But this is not enough to save the desperate coal situation. We must do more than maintain our lead on last year, and a careful investigation of the reason for failure must be made. In the summation for Aug. 10 the car shortage is credited with 9.8 per cent., labor shortage and strikes with 4.0 per cent., mine disability with 4.2 per cent., no market with 0.4 per cent. and all other causes with 1.9 per cent.

The railroad inabilities hardly find place in a labor review. Yet in passing it will be permissible to condemn an economy which did not find funds for the complete revitalization of the railroads. On the railroads depend the manufacture of steel, and, consequently, the necessities of the railroads come ahead of the muntion needs. Transportation is a basal industry in a more real sense than the steel industry, and any material it needs to develop it from a a condition of inability to one of adequacy should be preferentially provided.

REASONS FOR EXCESSIVE MINE DISABILITY

An important shortage, however, arises, as has been shown, from mine disability. The United States Geological Survey does not analyze this deficiency. It is not clear whether it arises from lack of material or from lack of men to keep things in repair or from an unwillingness of day hands to work overtime. When it is hard to obtain men after hours it is necessary to shut down the plant and make repairs which at other times could be made at night. But there may be another cause for disability. We are arriving at a period of the year when the streams are low and shortages of water occur, making the running of boilers difficult. Low water also results in increasing the acidity of the streams because it increases the percentage of mine effluent to total stream flow. This often causes the boilers to give trouble, whereas in high water the boilers run without much care.

The mine disability in northern and central Ohio ran up to 13.1 per cent. in the week ending Aug. 10; in Illinois it was 7.4 per cent, in Indiana 6.8 per cent and Iowa 5.6 per cent. A shortage of orders has appeared in Kansas and Missouri, Oklahoma and Arkansas, on the Western and Pacific coast, Iowa and the Rocky Mountain region. The lack of orders is most keenly felt in the Rocky Mountain district where the shortage is 6 per cent. of capacity.

WILL END BONUSES AND LEAVE WAGES ALONE

Dr. Garfield has not been convinced by the presentation made by the United Mine Workers in favor of increased wages. Where bonuses are being paid he is of the opinion that the price of coal should be cut till the practice is eliminated. He has no intention of raising wages elsewhere to bring them up to the bonus level.

Much bitterness has arisen from the temperance agitation. The *United Mine Workers Journal* says: "The fact that the coal miners of America are producing more coal than ever before in the history of the industry, and doing this with a greatly reduced force of miners, is the best answer to the charge of the National Coal Association that liquor drinking by miners is retarding coal production."

Of course, it does not prove anything of the sort. It only proves that some men are doing more than they did before and that the mines are working more steadily. Despite the showing quoted drunkennness may be more or less frequent and general. There is reason to believe that the quality of the liquor drunk is lower than it has been in the past. From all appearances where the miners are mostly natives, the war is having a steadying effect. An all-American mine is less apt to be troubled by drunkenness than one with a large number of foreigners. It is in the American strongholds like Kentucky, Virginia, and Rimersburg, Penn., that the men are working on holidays and giving their money to the Red Cross. Men who deliberately give up their holidays give of their best every day of the week.

RIMERSBURG WORKS FOR RED CROSS ON LABOR DAY

At Rimersburg, a little village on the Sligo branch of the Allegheny Valley, Clarion County, the miners have resolved to work on Labor Day, Sept. 2, for the American Red Cross, to which organization their wages will be paid. The officials of the Acme Gas Coal Co., the Lehner Coal Co., and the Halmer Coal Co. have agreed to turn over to the same orginzation 50 per cent. of their pay rolls for Labor Day. That should give the mine workers an incentive to put out a good tonnage.

It is different near Pittsburgh. There, it was questionable for a time whether one day would satisfy the mine workers. They wanted to have their annual meeting at Kennywood Park on Aug. 31 and to celebrate Labor Day on Sept. 2 into the bargain. The park was leased, badges were ordered and advertising printed, but finally it was arranged to hold the meeting concurrently with Labor Day. Had the miners insisted on observing Saturday, Aug. 31, they would have laid themselves open to a fine of $1 apiece, and there was every disposition on the part of the operators and federal authorities to impose it. The union leaders were against the double celebration. Some operators were asking that the electric power be shut off the park on the Saturday of the miners' celebration. There was much excitement and anxiety, but after all the patriotism of the mine workers and their sense of obligation under their contract had the upper hand.

HARD COALERS SEEKING BITUMINOUS WAGE RATES

In the anthracite region many of the drivers are convinced that they should make the same wage as the men of their occupations in the bituminous mines. The drivers of the Susquehanna Collieries Co. at Williamstown colliery, near Lykens, Penn., decided Aug. 17 that they would not go to work until their pay of $3.11 a day was increased by $1.89 to the $5 rate in force in soft coal mines

On Aug. 19 the 1400 mine workers who were thrown out of work decided to cast in their lot with the drivers and not to return to work till their demands were granted. The "outside" men are not making a demand but, of course, they are not working. They recognize that their position is the same as that of the drivers, and they intend to strike as soon as the drivers "get theirs." As there are 300 of them the mine will inevitably be laid idle, when, of course, there will be some others who will be seeking a readjustment.

On Aug. 14 twenty mine workers at the Smith colliery of the Wilkes-Barre Anthracite Co. refused to pay union dues, and the other mine workers refused to work with them. The strike only lasted a day, the men leaving the matter to the district officers.

A commission has shown that Alberta mine workers have to pay 25c. per day more for living expenses now than in April and consequently, as they have a sliding scale which is based on the cost of living, they will receive an increase in wage of 25c. per day to date from Aug. 1.

Williamson Miners Say "Work or Fight"

The members of the United Mine Workers of America in Williamson County, a leading coal producer in southern Illinois, have agreed that at each mine two men, one selected by the company and one selected by the mine workers, shall form a committee to keep a record of the miners who leave the mine early in the afternoon and of those who, without sufficient excuse, do not "show up for work." This is an action of the mine workers themselves. Every man must "work or fight," and the men of Williamson County are of opinion that it means something more than "have a working place or fight." They take it as it was meant—literally and without a quibble. They feel that the miner should put in the 8-hour maximum in the mines and produce all the coal he can in that time.

Even Engineers' Regiment Rejects Miners

Capt. William E. Mitchell, in charge of the Central Illinois recruiting district, with headquarters at Peoria, has sent out orders that hereafter no men connected in any way with the coal-mining industry are to be permitted to enlist. Recruiting officers are also directed not to enlist men who have recently resigned positions in the industry. Each case of a man who claims to have severed his connection with a coal company, with no intention of resuming such occupation, is to be carefully investigated by communication with the former employer and if it appears that the applicant has left such employment without consent of the employer, he is to be rejected. If a man has been employed in or about a coal mine he is not necessarily barred, but mine workers are not to be permitted to enlist if they have quit such employment with that intention. Information has also been received that no more miners are to be enlisted even in the Twenty-seventh Engineers, all the recruits in which up to this time have been miners with not less than three years' experience.

Miners Fine Man for Speaking German

Disorders in the name of loyalty continue to occur sporadically in the Illinois fields, despite President Wilson's appeal for an abatement of mob violence during the war. Charles A. Karch, until recently district attorney at East St. Louis, went to Campbell Hill, in Jackson County, the other day, to act as attorney for William Schatte, charged with speaking German to his father in front of his home. The mayor of Campbell Hill had recently issued a proclamation forbidding German speech, following a visit of a delegation of miners from Willisville, five miles distant, who threatened to clean up the town.

State's Attorney Otis Glenn of Murphysboro prosecuted the case, although there was no charge that a state law had been violated. A delegation of about 200 miners from Willisville attended the trial. According to Karch, Glenn, in his address, said that there ought to be a riot if Schatte was not convicted. The justice fined Schatte $50. Karch, anticipating such a result and desiring to get the case into a court of record, produced a bondsman and began preparing an appeal. The miners gathered outside and sent in word that neither Karch nor his client should leave the building until the fine was paid. Glenn and an army officer made speeches asking for order, but Karch considered it prudent to have his client pay the fine. Karch will call the attention of the Federal authorities to the occurrence.

District Attorney E. C. Knotts of Springfield, Ill., has ordered the officials of Madison County to take action against the members of a mob which recently compelled Alois Otradowitz, an Austrian, to kiss the flag and leave the town. The State's Attorney has promised to call a special grand jury. Evidence against the mob members has been gathered by Julius Rosin, chief of the United States Bureau of Investigation. Harry Fishback, vice-president of the United Mine Workers of Illinois, has been coöperating with the Federal officials. It was in this county, at Collinsville, that Robert P. Prager was lynched.

Farrington Sidesteps Prohibition

Frank Farrington, president of the United Mine Workers of America in the Illinois district, wants it understood that he does not concur with the National Coal Association in its advocacy of nation-wide prohibition for the duration of the war. In a telegram to Fuel Administrator Garfield he says: "Press dispatches implying that I had conferred with President Wilson, with you, and with the National Coal Association, and that I had urged nation-wide prohibition, and statements that I am in favor of the project of a so-called industrial army are untrue. I deny that the production of coal in Illinois is materially reduced by the indulgence in intoxicants of the miners of this state, and I protest against such an implication as being an unwarranted indictment against their intelligence, dignity and patriotism.

"The contributions of the miners to the Red Cross, their purchases of Liberty Bonds and Thrift Stamps, and also their active and effective suppression of seditious conduct and disloyal utterances in the mining communities throughout the state, and their insistence that all men subject to military duty go to the front, give assurance that they will measure up to any requirements made known to them by the Government. We hold the Illinois miners are just as patriotic as are the men employed in the shipbuilding industry, munition plants and other industries engaged in the manufacture of war supplies, and if a line of contact is established between representatives of the Government and the men who mine the coal such as will enable them to know what is required of them, their sense of duty is such that they will meet every obligation.

"The proposed plan for an industrial army with badges and service stripes will not appeal to the manly sense of patriotism manifested by our men. A campaign of education based on direct statements to the miners by the President of the United States and the Fuel Administrator, conveying to the men the truth that their industry in the mines is as vital to the nation and as honorable as military service is all that is necessary and is much more expedient than the proposed project. I pledge for myself and my executive board members that we will carry such a message into every mining community in Illinois."

Secretary Nesbitt of the Illinois district joins with Frank Farrington saying: "When the Coal Operators' Association attempts to lay the blame of coal shortage to the miners because of the effects of booze then they are doing the very thing that may disturb the harmony that has existed in the coal industry for the past months. They are stroking the fur the wrong way as usual and if coal production is not kept up to the maximum the coal operators will be to blame."

Thomas T. Brewster, president of the Coal Operators' Association of the Fifth and Ninth Districts of Illinois, has wired to Administrator Garfield that he concurs in Farrington's telegram. He states that he expressed substantially the same views to Mr. Neale during a conference in Washington last week. While Brewster sends the telegram in the name of the association, it is certain that he does not fairly represent the views of the members of the association or of the Illinois operators generally.

Aside from their personal views on the question of prohibition they are practically unanimous in the opinion that saloons are a decided detriment to coal production.

John Henderson, of St. Louis, Mo., president of the West Virginia Coal Co., of Marion, Ill., says he fully approves the action of the association. "I am not a prohibitionist," he says, "but saloons, whether at the mines or a hundred miles away, hurt coal production. The coal states, at least, should be dry. I believe the operators are unanimous on this question. There is no argument in favor of the saloon in connection with the mining industry that I can conceive of. Saloons are a detriment not only to the mines but to any class of work."

The Trades and Labor Assembly of Belleville, Ill., at its last meeting, adopted a resolution in opposition to nation-wide prohibition and in protest against Administrator Garfield's order that no more coal is to be supplied to breweries after their present supply of raw material has been used. Belleville is a brewery center.

Would Have Extra Pay for Overtime Work

Anxious to hasten a favorable decision on the wage demands which their leaders have placed in the hands of the Government, the employees of the G. B. Markle Coal Co. have refused to work more than 8 hours daily, thus violating the express provisions of their contract, which reads: "If, because of breakdowns, repairs or the requirements of transportation or other causes essential to efficient operation, it is found necessary to extend the normal workday of any employee, or any class of employees, the operator may do so, at his option, paying for overtime a proportionate rate per hour as determined from the rates established under Section I hereof."

Despite this clear requirement, no breakdowns are repaired at the G. B. Markle mines after the 8-hour limit and none, the men say, will be repaired till time and a half is given for overtime and double time for Sunday. The Oakdale local is foremost in agitating for this new provision. Many men had been working overtime and they still desire to do so but they are threatened with expulsion from the union if they do not consent to violate the rule which the union itself approved in representative session. These day workers found the additional pay of no little service in meeting the payments on their Liberty Bonds, but now they are deprived of that source of income. However, loss of tonnage resultant on the delay in repair work is more harmful than the delay in payment for Liberty Bonds. Repairs can be effected more readily in the overtime hours than when the mine is running, and, in fact, many repairs can be made only at such hours.

Nationalities in Clearfield District

The number of miners in the Clearfield, or Central Pennsylvania, or No. 2 union district of the bituminous regions of Pennsylvania, increased in 1917 over 1916, the gain being in Americans. The American influx not only made up for the small loss incurred in the number of foreign mine workers, which totaled 342 men, but it increased also the number of mine workers by 4,772; for as will be seen the total number of American mine workers increased by 5114.

Order	Nationality	1916	1917	+ Increase or — Decrease
1	American	20,555	25,669	+5,114
2	Italian and Tyrolean	9,386	9,039	— 347
3	Slavonian	8,779	7,985	— 794
4	Polish	6,561	5,669	— 892
5	Austrian	3,121	4,527	+1,406
6	Hungarian, or Magyar	3,752	3,913	+ 161
7	Russian	1,953	2,199	+ 246
8	English	1,845	1,491	— 354
9	Swedish	1,232	1,362	+ 130
10	Scotch	1,161	1,118	— 43
11	Irish	963	1,039	+ 67
12	German	1,262	1,021	— 241
13	Croatian or Horwat	707	726	+ 19
14	Lithuanian	625	718	+ 93
15	Welsh	462	522	+ 60
16	French	261	324	+ 63
17	Greek	335	305	— 30
18	Belgian	253	289	+ 36
19	Rumanian	25	81	+ 56
20	Finnish	94	60	— 34
21	Canadian	7	49	+ 42
22	Danish	55	38	— 17
23	Spanish	.....	36	+ 36
24	Montenegrin	4	31	+ 27
25	Bohemian	80	27	— 53
26	Syrian	14	15	+ 1
27	Mexican	.....	11	+ 11
28	Serbian	.....	6	+ 6
29	Swiss	.....	3	+ 3
	Total	63,492	68,264	+ 4,772

The gross increase is 7.51 per cent. We have arranged the nationalities in the order in which they stood in 1917. The representations of some so-called "enemy alien countries" have decreased and others have increased. The Germans have decreased considerably; the Austrians and the Hungarians have increased, as have also the Croatians and Horwats. The neutral countries have increased in numbers somewhat, Russia (neutral only part of 1917) leading with 246, Sweden with 130, Lithuania (neutral only part of 1917) with 93, Rumania (neutral only part of 1917) with 56, Spain with 36, Mexico with 11, and Switzerland with 3.

Finland (also neutral only part of 1917) is an exception, for it was represented by 34 less men than in 916. These men doubtless went back to take part in the fights succeeding the declaration of Finnish independence. Denmark, strange to say, lost 17 men. The people of allied nationalities, and with them we include the Czecho-Slovaks, Poles and Syrians, have in most cases decreased in numbers owing to recruiting. The Polish loss led with 892. The Slavonian loss was 794; the English, 354; the Italian, 347; the Bohemian, 53; the Scotch, 43; and the Greek, 30. The British and Italian losses would have been greater, but large drafts in earlier years made a large draft in 1917 unlikely.

Some of the allied nations had increased representation. Principal among these were the Irish, 67; French, 63; Welsh, 60; Canadian, 42; Belgian, 36; Montenegrin, 27; Serbian, 6, and Syrian, 1.

The figures on which the table is based were prepared by Charles O'Neill, production manager of the district in question and secretary of the Central Pennsylvania Bituminous Coal Producers' Association.

Missouri Men Again Ask "To Be Shown"

The patriotic tour arranged by the miners and the Southwestern Interstate Coal Operators' Association, to stimulate production, has not been an unqualified success. Reports indicate that there was a decline in production, an increase in number of days of layoff, and an increase in grievances, in many districts, immediately following the tour. Commissioner W. L. A. Johnson, other commissioners, the officers of the miners' district associations, and a maimed soldier back from the front, spoke in all at 25 meetings in the mining towns of Missouri, Kansas and Arkansas, Mr. Johnson personally attending about a dozen of the meetings.

The representatives of the operators pledged such management of the mines that the largest opportunity for production would be provided, and asked that miners work as nearly as possible eight hours every day. Miners' representatives pledged a maximum of work. The soldier urged support of the boys at the front. While the spirit of loyalty may have been aroused, one incidental result of the tour was the inspiration to make a closer inspection of the conditions in the mine so as to clear the way for possible complaints by the miners.

In Missouri, especially, a flood of suggestions came to state fuel administration headquarters, and to other parties, as to how the mines could be made to produce more largely, by the addition of this or that equipment, or by such and such changes. Lieutenant Governor Crossley, fuel administrator, held a meeting of representatives of operators and miners, at which many of these suggestions were discussed. The meeting got nowhere; it was explained that one of the main factors in the patriotic effort now being made is the better use of present equipment to gain a larger production—that industry must increase its help to win the war, and not put any more burdens on manufacturing, transportation or financing.

Indiana's First President To Be Honored

Edward Stewart, the president of the United Mine Workers of America, in the State of Indiana, and William Mitchell, the secretary for the same organization in that state, with W. B. Van Horn, international board member, have had a long search at the cemeteries in the vicinity of Harrisburg, Ill., for the grave of Gardner Knight, the first president of the United Mine Workers of Indiana. He left that state in 1906 and located at Collinsville, Ill., and shortly after moved to Harrisburg. On May 25, 1907, he was working with his "buddy" when the latter stepped out of the room. On returning the "buddy" found the dead body of Knight. Apparently he had dropped dead. The Indiana mine workers have located the body in the City Cemetery of Harrisburg and will erect a monument in honor of this, their first, president.

EDITORIALS

Schemes Which Cripple War Work

FADDISTS are always busy, but at no time were they ever more completely at home than during this world war. The Government is taking over all kinds of utilities and starting all manner of new projects, and the faddists now have a chance to urge their plans on politicians and visionaries who are spending other people's money and not their own, and who are therefore not personally interested in the outcome.

Some of the schemes, however, are good enough in their way. The one proposed by Representative Thetus W. Sims of Tennessee in his bill presented Aug. 19 in the House has something to commend it. This journal and many others long ago expressed the belief that the soft-coal companies should deliver either power or gas to the public and not bituminous coal.

Railroads use altogether too much coal in the work of delivery. The estimate of Dr. Garfield for the bituminous coal likely to be used by the railroads during the present coal year 1918-1919 was (as we showed last week) 26.53 per cent. of the whole bituminous coal cutput. But that figure should be written somewhat differently; it is 27.05 per cent. of the coal delivered to the railroad, for it is the net percentage which really counts. Of course, only a portion of the entire railroad freightage is coal. It is said to be 16 per cent. of the whole. As coal travels in bulk—in full car-load and even in full train-load lots—it is probable that the fuel consumed in coal freightage is less than the coal used in the freightage of an equal weight of miscellaneous material. Overlooking that fact, the percentage of coal used in coal freightage would be 4.33 per cent. of the net amount of coal which leaves the mining towns in which it is produced. This percentage is roughly 26,560,000 tons.

Clearly, it is well worth the saving and should be saved. The year when the world has a war on its hands, however, is not the time to go to work to save it; for the labor of putting the saving into operation is too great and the time needed for completing any new plan of distribution too long. It would be far better to build up the railroads to a point of greater efficiency. More railroad cars, sidings and terminals, and more storage yards at mines are needed.

Representative Sims wants the Government to buy power plants, to build others at the mouths of coal mines and to assist in financing such operations. Refuse coal is to be used and the power supplied to factories by electric current. Some believe that with electrification of the railroads we could save two-thirds of the coal now used in railroad operation. Whether that is true remains to be seen, but it is certain that it should not be done till the war is at an end.

Yet as a war measure the mine-to-factory plan is not nearly so chimerical as are the water-power schemes. The Muscle Shoals water-power plan so enthusiastically hailed when the war commenced has already been laid on the shelf till after the war, and the ammonia and cyanamid will be made for the present solely by steam power. Electrification of the railroads must similarly be delayed.

A reconstruction period from a mechanical point of view is quite likely to follow the war, and remarkable changes will occur. The faddists want the Government to attempt them now, knowing that it will be hard to get private capital to plunge in heavily after the war in face of the immense risks to be run and in face of the fact that, no matter how much the public profits, the dividend of the power-plant builder is likely to be strictly limited by Federal and state regulation.

Often it seems that the Government must ultimately do the work. A gamble in which the gambler runs a good chance to gain 5 per cent. and a better chance to lose 100 per cent. is a gamble that does not commend itself to anyone. The tendency is all toward Government ownership, not because it is efficient or desirable, but because with regulated profits business ventures are either as good as investments in Government bonds or complete failures. Of course, as soon as the profit from a Government bond is the best profit available, the tendency will be toward buying Government bonds instead of investing in so-called securities that are allowed to yield at best no more than bonds and are quite apt to be complete failures.

If new developments when made under private ownership are to be so scrupulously regulated, they will have to be made by the Government if they are made at all. We shall be willing individually to invest in the extension and continuance of *recognized* industries which afford a certainty of a given annual income, but such risky innovations as are likely to be regulated we will put up to Uncle Sam. Perhaps he will save money for the public on some of them and the public will stand the losses made in the others. He will probably learn after a while that to have a balanced account he must have some big gains to replace his big losses. He must run some business at a vast profit so as to find the wherewithal to repay the losses on the Panama Canal and like unprofitable developments.

But to return to the main proposition, such mammoth schemes of dubious value must not be allowed to cripple war work. The immediate needs stand first. Labor may have to be used for the temporary alleviations of the transportation shortage. That labor may possibly be partly wasted, but there will be less waste than takes place every day on the battlefield; and the sooner the war is over the sooner we can cut out these and all other wastes.

We shall do ill to stagnate our industries and to defeat our national purposes by attempting during the war any basal and tedious reconstruction of old and tried methods, however faulty; for if we do so, we run the risk of repeating the mistake of the earlier authorities

in charge of our aircraft production, who in indecision and in futile experimentation wasted full sixteen months of incalculably valuable time.

Our methods are not the best that can be devised, and they never will be. We shall have reached an undesirable stage in development when we no longer see vistas of promise ahead as the result of diligent reconstruction. Science progresses like nature, by the death of the older forms. The decay of old models and methods serves to form the humus for new developments. As life builds on life, so invention builds on invention.

But we can readily destroy more rapidly than we can rebuild. We can be too enthusiastic in our renovations and at no time is there greater danger of such foolishness than during a war, which reveals the condition while removing or greatly restricting the opportunity to correct it.

After-the-War Wage Arrangements

IN AN open market, and with runaway production, wages determine prices. So the margin between price of product and cost of production will be unchanged by a change in wages. It may be plus or minus. All will depend on the fierceness of competition and the degree of intelligence of the competitors.

As wages under normal conditions determine prices, it is no advantage for operators to lower wages. Wages should therefore not be lowered after the war. In a certain key district, say the Pittsburgh region, wages should be fixed to increase with cost of living, but not to decrease with it should it decrease. The cost of living should be determined every six months by a competent authority and adjustment made to accord. In other regions than the key region, the increases, if any, in the rate of mining in cents per ton granted in the key region should be imitated exactly in cents per ton so as to preserve the industrial equilibrium.

Where the price of powder to the miner has remained fixed regardless of the price to the operator, it should remain unchanged after the war. When the price of powder goes down the operator will be entitled to the saving in cost thus made possible. He has continuously met the loss due to the rise in price and no one should begrudge him the adjustment, especially as it will affect all about equally and therefore will not promise a profit to any one; for where all gain, the price reflects that fact.

House rents should be lifted to a profitable figure at the next adjustment. The cost of rent should be figured in with the cost of living at the higher rent provided and the wage adjusted to conform with the cost of living thus determined unless the change would result in a reduction of wage which is not to be considered.

Men who cannot read and write English should be required to give one hour's attendance without pay three days a week at a school for teaching the English language. A fee should be charged for this training high enough to provide for a really competent teacher and for adequate equipment.

When wages are next raised the increase determined as being fair should be doubled and that larger increase applied only to the half year which includes the winter season, so as to make the demand for coal more equal. Any further increase to contract men which cost of living may ultimately provide should be in the form of day wages and not contract wages. This will form an incentive and award to the operator who gives his men an opportunity to do a good day's labor and to see that every man does a full day's work.

Most of these changes have been advocated before at different times. They are good plans whenever they may be put in operation, after the war or later. Working under them the miner will feel that his interests are safeguarded, that the principles of justice rule and not the caprice of the operator, and it will be clear to him that if he strikes for more pay he strikes not against the operator, but for an unfair proportion of the national output. It will be plain that his strike is directed not against his immediate employer but against his remote employer, the other working men known in general as the public.

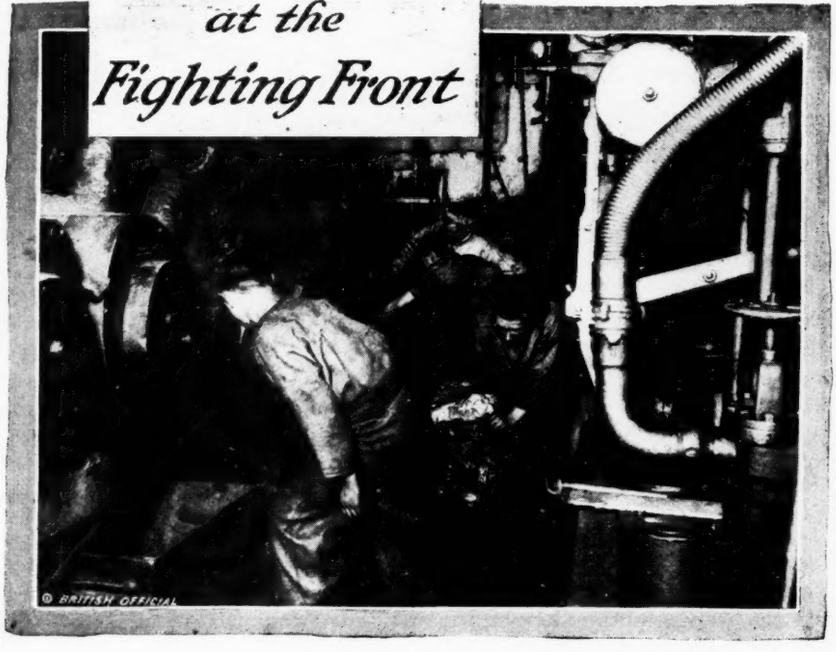
Strikes, like war, must ultimately be cast into the discard. The fundamentals of wage agreements should somehow be written. We need a Grotius to write the laws of industrial peace, perhaps for one industry only, but later for all industries. Must all justice—justice to employer and justice to employee—be battled for? Can not the fair thing be written in perennial brass so that it may not be doubted? Of course, a few matters will for a while be debatable. We shall have higher justice as we have higher mathematics. But the simple, basal rules may we not now write, read and follow and so avoid those frequent jars which destroy the poise of our industrial life. But to secure these fundamentals we all need economic education. We need above all to let the workman cut his eye teeth. Induce the workingman to accumulate stock or a property and he will have a clearer light on the necessities of capital.

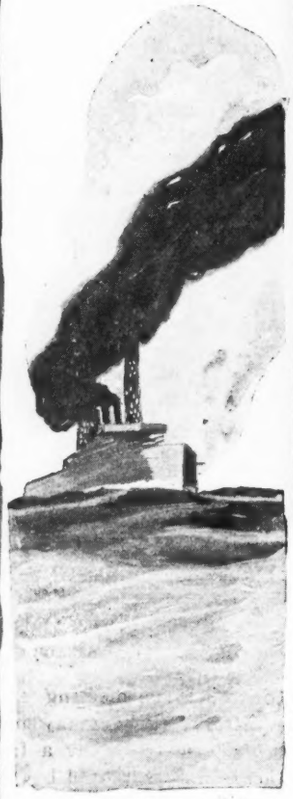
Shall We Seek More or Better Mines?

SEVERAL of the small operators, some of them new to that capacity, just barely start operation before they are importuned to go into another venture. They are not out of debt on the plant they are running; they do not have it in good working order; they lack the needful equipment—but the new venture looks good. Instead of riding one sound and speedy horse, therefore, they drag along on two sorry nags neither of which is a credit to the owner. This manner of playing operator does not pay. After the war ends and the usual set back comes, these men with their badly equipped mines will find it impossible to operate them profitably. If they had stood by the one mine, nursed it, watched it, equipped it, it would have done more than the two mines will do and a year after the war there will be plenty of opportunity to load up at sales and foreclosures with plants of the overventuresome.

But we do not need to rely on self-interest alone, which might in cases be hard to prove, for it can be shown that it is not a patriotic act to leave a half-opened mine to lag and do uncertain, irregular work in order that we may open another mine without any greater prospect of efficient and orderly operation. A good mine put in by the financially competent is another proposition. The reference is to the smaller mines, which are differentiated from wagon mines by the possession of, or the aspiration for, a railroad switch.

Here's Where Your Coal is at the Fighting Front





Coal passers and stokers who use our coal in the narrow passageways of a battleship, toiling before blazing hot fires, have a far more burdensome existence than those who mine and handle the coal in the cool atmosphere of the ordinary American coal mine.

DISCUSSION BY READERS

Dealing with Slackers in Mines

Letter No. 1—I have been deeply impressed, recently, in reading certain references to the loyalty of the French coal miners, who are face to face with the severe conditions imposed on them by reason of the war in their own country. I read these comments, in the French newspapers sent to me, with great interest, and cannot help but contrast the situation there with that in this country. The American miner, for the most part, feels his responsibility for the winning of the war. Never before has he had the same opportunity to make such big wages. Nevertheless, there are many slackers among them.

Numerous suggestions have been made by *Coal Age* writers, in discussing the relation of the miner to the war and the mining situation in general. In order to increase the production of coal, some have suggested longer working hours. I agree, however, with those who contend that a longer working day will not increase the output of the mine. The trouble is not in the number of hours the miner works. He can produce all the coal that is required if the cars are on hand to load. The shortage of cars is the one great difficulty to be overcome.

Next to the question of car supply is that of holding miners regularly in their places. There would be no slackers if American miners believed, as do the French, that there is as much heroism in digging coal as in fighting at the front. In our efforts to eliminate slackers from the mine, we must impress upon them the truth of heroic service beneath the ground.

What Conscription of Mines Should Mean

While I believe in the conscription of miners, it would be of a different kind from that imposed by the draft law. My idea of the conscription of the miner would leave him free to perform his daily tasks according to his usual custom, with the exception that his work would be under the strict discipline of the Government, with a view of increasing the tonnage per man, and making the production of coal equal to the demand.

This conscription would be somewhat along the lines of the employment of a government inspector, as suggested by Thomas Hogarth, June 29, p. 1208. Another has suggested the wearing of a "service button"; and still another, keeping tab on the work of all miners by "a system of index cards" that would show where and how long the man had worked and with what satisfaction to the company.

In this regard, my idea would be that mine superintendents and foremen should act under the authority of the Government and report those miners who are slack in the performance of their work, for investigation by the government inspector. As someone has said, a soldier disobedient to orders is punished, and I agree that a suitable punishment should be inflicted on idle mine workers, including such as do not work industriously and show the best that is in them.

All workers of this class are *slackers* and, in retarding the production of coal, they retard all industrial work by their failure to produce to the extent of their ability. At present, no penalty is imposed or any fine exacted, and there is no way of reaching this class of slackers in the mines. They cannot be fined and yet they obstruct the work continually.

There is no question, in my mind, but that the miners can produce all the coal required if they will do their utmost. It is possible for the organization of miners to impose the obligation of steady work on their own members and thereby avoid any action by the Government; but, in any event, let us all stay on the job with the same faithfulness as displayed by our brothers in France.

GASTON LIBIEZ.

Cedar Point, Ill.

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Only last week, an article headed "Hun Propaganda Trying to Injure Anthracite Industry" received wide circulation in the daily papers. The article referred to a meeting of mine workers that was held in Wilkes-Barre, Aug. 6, when a resolution was passed drawing the attention of the coal operators to the increasingly hard living conditions of their employees. Referring to this resolution, the article denied that the conditions of the miners were hard, stating that such claims were false. The claims, however, are based on facts that cannot be denied.

How War Affects Conditions Underground

Such is the urgency of the work underground that not only is the miner often compelled to work under dangerous conditions for the lack of needed supplies, but, in addition to mining and loading his own coal, he must often finish out his day's labor by carrying rails, track ties, props and brattice boards from one place to another. These facts are proof that the statements referred to were correct and that the conditions under which the miners are forced to labor are increasingly hard.

While I am not in accord with the meeting, as it was held, I feel justified in defending the many men who attended with an honest purpose to secure a fair deal. The loyalty of the anthracite miners cannot be disputed. They have made home secrifices to buy Liberty Bonds, and subscribed liberally to the Red-Cross drives. Many of them are working 35 and 45 shifts a month, because of the urgent demand of the country for coal.

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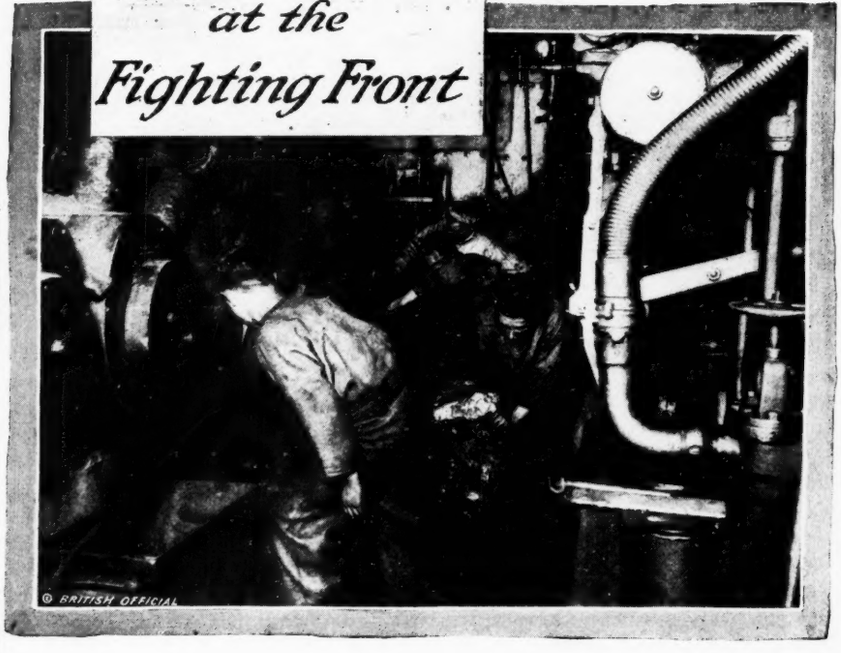

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While it is undoubtedly true that there were some present at the meeting, Aug. 6, whose loyalty would not bear the searchlight of criticism, the large majority of the men who attended met to arrange in regard to the best way of presenting their case for the consideration of the Federal Fuel Administration. The fact of the matter is that, not only are the ranks of the miners being depleted by the draft and by voluntary enlistments, but the wages that can be earned in other war industries have been advanced in much greater proportion than those of the coal miner.

Mining Wages Lower Than What Can Be Earned in Other Industries

The wages paid mine workers are such as not only to offer no attraction for labor to enter the mines, but call for much sacrifice on the part of many loyal miners who are feeling the injustice accorded them by reason of the urgency of the country's need. Miners are made to feel the injustice of their position all the more because of the slander of the daily press, which is calculated to fill the public minds with the thought that the average coal miner is a "slacker," whereas no industrial worker is more loyal than the miner.

In closing, let me say that such untruthful statements in the public press cannot fail to lead I. W. W. organizers to think that the anthracite fields promise a good harvest for them, and cause them to increase their efforts to strengthen themselves in this region. The principles of that organization are un-American and it is the duty of every true and loyal worker to keep all such out of the mines. J. P. G.

Wilkes-Barre, Penn.

Letter No. 2—Referring to the announcement in *Coal Age*, July 25, p. 196, that the coal production for the week ending July 13 was almost 13,250,000 tons, allow me to state that the report of the Fuel Administration at Washington, after mentioning this record production for the week, followed their statement with the remark that "If the miners keep the output of coal up to that figure, there will be no danger of shortage next winter," which is not true if the car supply fails.

In justice to the miner, it is only fair to say that this remark reflects on the great body of miners, as it conveys the impression that the entire responsibility for the production of coal rests on the toilers in the mines. The wording of this official bulletin from Washington allows of but one conclusion, which is that the coal output depends solely on the miner, which is not only wrong in fact but an imputation that questions the patriotism of this body of faithful workers. The flow of coal from the mines does not depend exclusively, or even largely, on the miner.

Railroads Responsible for Coal Shortage

The public should know, as all practical mining men know, that the coal supply for industrial and domestic purposes, now and next winter, is and will be determined by the ability of the Railroad Administration to supply the needed cars for its shipment to market. A shortage of cars on the siding always means an idle mine and hundreds of idle miners who are unable to perform their daily tasks.

In the discussion of this question, too much has been said in regard to the responsibility resting on the miner, and too little emphasis has been placed on the greater responsibility resting on the Railroad Administration, whose task it is to supply the needed cars. It is a mistake to attempt to conceal this most vital fact bearing on the production of coal.

Let me say, here, that there would not have been a coal famine last winter had it not been for the shortage of railroad cars at the mines. It may be true that the administration is not wholly to blame for this failure of car supply, which may arise from weather conditions, or their inability to build the necessary equipment; but that is no reason why the responsibility for coal shortage should be laid on the backs of the willing miners.

There is but one way to insure a constant and adequate output of coal, and that is to give the miners plenty of cars in the mines and on the railroad tracks so that there will be no delay in loading coal either at the working face or on the tracks for shipment. Give the miners the cars, and they will attend to getting out the coal. Let the Government do its part and the miners will not be found wanting. Fairness to all demands that the Government assume its share of responsibility for each week's production of coal.

Mammoth, Penn. PATRIOT.

Letter No. 3—The numerous references to the miner that one reads today, including some statements that reflect on his loyalty in the present crisis, have put these thoughts running in my head, after reading the verses of Rufus T. Strohm, *Coal Age*, Aug. 1, p. 201.

I always read the verses in Coal Age *as they come,*
And Mr. Strohm has sent some stirring lines;
But what he said about us has almost struck me dumb,
For I've spent some little time around the mines.
Of course we have some slackers, like every other trade,
But that should not condemn us as a whole;
For we know we are responsible for every gun that's made
And we shall not lose the war for lack of coal.

He surely does not know us and more knowledge he should seek,
For his lack of information must be plain;
When he says the miner's time card shows but thirty hours a week
I feel that on our name he casts a stain.
Each day about at daybreak, we go down into the pit,
Just guided by the glimmer of a lamp,
And work our full eight hours, before it's time to quit
And turn our faces to the homeward tramp.

No one can now accuse us—if we're given half a chance—
Of doing anything to blush with shame;
For, if we are not fighting with the boys across in France,
We know that we are with them in the game.
We do not seek for glory, but still we do not feel
Like taking kicks we really don't deserve;
We only ask fair treatment, a square and honest deal,
For what we've shown of loyalty and nerve.

No matter how we're treated or what the papers say,
We still intend to do our little bit,
For every shot that's fired by the boys in France, today,
Is provided by the miners in the pit;
Yet we'll give them all the glory and let them have the praise
For what they're doing and for what they've done,
But we'll claim a little credit, in these stern and trying days,
For doing all we can to whip the Hun.

McIntyre, Penn. THOMAS HOGARTH.
(Revised by Michael Bernard.

Americanizing the Foreigner

Letter No. 2—It was with keen appreciation that I read the letter of "Observer," *Coal Age*, July 25, p. 189, as his remarks regarding the manner of dealing with the foreign-born had a trend of optimism seldom manifest in a discussion of that subject by men who have grown up around the mines.

While it is quite true that the writer of that letter offers no suggestion that can be put into effect immediately, yet his underlying thoughts contain a germ of reason that, if fostered, may be turned to good account.

Attitude of the Average Mine Official

The average mine official will, in nine cases out of ten, throw up his hands and say that there is no hope of Americanizing the foreign-born miner. We have all heard men holding high positions, in coal-mining companies, argue that they have tried all possible methods without success. Their belief is firm that the foreign miner will not forsake his native habits and accept the refinements of civilization. Almost without exception, mine officials of American birth claim to have labored in vain to redeem the foreigner.

It is to be much regretted that men are so willing to give up a difficult task What would the world be today had electricians not continued to grapple with problems that long seemed beyond their reach? Everything is possible of accomplishment if we use our brains and stay on the job, and the question of Americanizing the foreigner is no exception to the rule. The man who is willing to let well enough alone is not the man to whom we can look for help in solving this problem. He is a quitter and no quitter ever reached the goal.

Problem Must Be Carefully Studied To Reach Parents through Their Children

The subject is one that must be studied from every angle. Mining men have discussed the question at their meetings, but have never gotten so far as to appoint a committee to study the matter and report. In larger cities where the foreign element predominates, considerable progress has been made by reaching the adult classes through the children, who are taught by capable instructors. This suggests that the schools, in our mining towns, may prove the best avenues of approach when we would reach the miner.

Let the teachers be instructed by mine officials to maintain a high standard of order and cleanliness in the schools. Too often it happens, however, that the school teacher in a mining town or camp is given no opportunity to accomplish possible good, because of a lack of facilities, which those in authority have failed to supply. In many cases, no playgrounds are available, and no effort is made to render the schoolroom and its surroundings attractive.

Again, reason suggests that the adult foreigner cannot be reached as readily through Americans as through people of their own kind who have become Americanized and are in the employ of the company. By living and mingling with their own, this class of workers can exert a greater influence in accomplishing their ends and, by degrees, inject into their friends American ideals and customs.

While, as has been suggested, most foreigners do not oppreciate the luxury of a bath as do Americans, yet it is not impossible to teach them the value of water in the improvement of their appearance if not of their health. A teacher by insisting on the children coming to school in clean frocks and with hands and faces washed and hair neatly combed, will do much to cleanse the home and purify the atmosphere where the children live, and ultimately redeem the older members of the family.

Efforts in Other Directions

Much can be done in the way of distributing posters, written in the native language of the people and telling of the services of the company doctor and the aims and purposes of the company officials in maintaining a clean and attractive town. All this, however, will surely fail of accomplishing the desired good when saloons are permitted in the place, and proper steps are not taken to keep the streets and yards free from garbage and other waste.

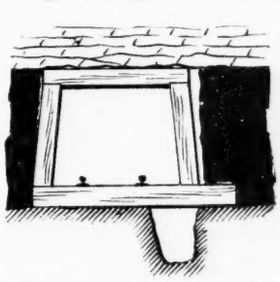
I am convinced that this subject can be dealt with successfully, and hope that it will be discussed from every viewpoint. Only by this means can good results be obtained. Optimist.

———, Ill.

Blasting a Ditch in a Mine

Letter No. 2—Replying to the inquiry of Geo. Smith, *Coal Age*, June 15, p. 1128, regarding the blasting of a ditch under the mudsills supporting the timber frames in a mine entry, I assume that the 10 x 10-in. timber frames are set 4 ft., center to center, and the 4 x 10-in. mudsills supporting them are laid crosswise of the entry. Under these conditions, if the ditch is to run along the side of the road it would leave the leg of each timber frame, on that side of the road, unsupported.

My suggestion is, in this case, to start the work by using a longer mudsill and hitching one end of this sill into the rib on the side of the entry where the ditch is to be blasted, as shown in the accompanying figure. Like J. W. P., who has discussed this question, Aug. 15, p. 326, I cannot understand why mudsills were used on this hard bottom. However, mudsills will be necessary to give support to the timber frames when the ditch is dug close to the rib, as illustrated in the figure. Let me suggest here that a heavier mudsill should be used than one 4 in. deep, as that would hardly support the pressure on the timbers above the ditch.



DITCHING AN ENTRY

The work of putting in the longer mudsills and resetting the timber frames must be done gradually by placing these halfway between the present frames and sills. The blasting of the ditch, if carefully performed, will probably not disturb the new timbers seriously. It occurs to me, however, that it might be better to drain this section of the mine by blasting a ditch in the parallel entry or air-course, and cutting through the rib for that purpose, if necessary.

I agree with J. W. P. that a ditch is always to be preferred to a siphon wherever it is practicable to make the necessary excavation. My experience has been that siphons are not generally satisfactory, especially where the conditions are such that their regular working is somewhat disturbed. W. H. NOONE.

Thomas, W. Va.

Letter No. 3—Regarding the blasting of a ditch on a slope road where the timber frames rest on mudsills and the bottom is hard, my plan would be to do this work at odd times when the mine is idle, or at night when the track can be lifted and the mudsills taken out, after setting temporary timbers to support the collars while the legs are being reset on the hard bottom.

It does not seem to me that mudsills are at all required in this case and should be discarded. As the timber frames are reset, the ditch can be blasted to the required depth, without disturbing them further. The proposition does not appear to present any serious difficulty.

After the ditch has been blasted to the proper depth the entire length or distance, I would lay tiling in the bottom and fill it over, only leaving holes at suitable distances apart that would allow the drain to be cleaned of any sediment or obstruction that might accumulate. I have seen such a ditch laid and it worked successfully. The road was only 5½ ft. wide and a six-wheel, H. K. Porter steam engine was used to haul the coal on a 24-in. gage track. I prefer the ditch to the siphon suggested. R. W. LIGHTBURN.

Perryopolis, Penn.

Loading Coal at the Face

Letter No. 2—The question of what weight of coal a miner can load in a day is one that is particularly appropriate at the present time, if for no other reason than the rivalry that it may arouse among practical miners to exert their best efforts to excell their fellows in the number of cars they load.

No doubt some miners who are prone to take things leisurely when working at the face will say that the claim set forth in the poster page of *Coal Age*, July 6, p. 29, where a man was said to load an average of 23 tons a day of 8 hours during the month of May, exceeds what is possible. By way of opening the eyes of such disclaimers and in fairness to the man who made this record, I want to say that my personal experience tells me that what would be called "a good miner" can enter his place at the regular time of starting, say 6 a.m. and be home again at 2 p.m., after having loaded from ten to twelve 50-bu. wagons or boxes, and not feel more than ordinarily fatigued.

WHERE CONDITIONS FAVOR THE MINER

The statement just made is based on facts and has reference to mines where conditions are, of course, favorable in every respect, as they are in the mines of the Connellsville coke region. To accomplish these results, however, there must be no delay waiting for smoke to clear or cars to be set. The miner's coal must be cut and shot down ready for loading, and empty cars must be on hand so that the miner can proceed at once with his work. There are times when it will pay the company to have a special timberman set posts, in different working places, so as to relieve the miner of this necessary work, and allow him to devote his whole time to loading his coal.

It is only fair to say that, in a seam of coal like that at Connellsville, where the height of the coal and system of mining are peculiarly advantageous, the miner finds less difficulty in moving about in the performance of his work than in seams where the coal is low and there are other hindrances and difficulties to be overcome.

THE JOLLY GOOD-NATURED FOREMAN

One particular feature that greatly assists the miner and his work is a good light, such as the electric cap lamp or the carbide light. Again, a good-natured foreman can do much to expedite the work of his men by his pleasing manner and his way of jollying men when undertaking a difficult task. The driver must be encouraged with a good word and, if off the track, given a helping hand to put the car back. In other words, the coal-producing spirit must prevail. LUMEN.

Perryopolis, Penn.

Letter No. 3—I have been greatly interested in the question of loading coal at the working face, as this work concerns a large production. First, let me say that it is the duty of every loyal miner to be in his place each working day and not allow one minute of his time to be wasted. Not only must the miner strive to increase his output each day, but he must clean his coal, taking care to throw out bone and other refuse. All coal should be cleaned at the face, as otherwise there is much delay when it is necessary to do this work on the surface.

Where there is the hearty coöperation of all mine officials with their men and the men are given what help is needed and do not have to wait for supplies of timber, tracking, etc., every man will have a disposition to do his best to increase his daily tonnage and load only clean coal. A miner should never be permitted to go home because some little work has not been done in his place. The foreman should make every effort to satisfy his men and keep them at work, since the loss of a ton of coal may mean the life of a soldier.

FAVORITISM AROUSES DISCONTENT OF MINERS

The Fuel Administration can do much to keep things moving smoothly at the mines, by showing no favor and treating every mine alike. When the government inspector shows a disposition to condemn coal loaded at a small mine, because it contains some refuse mixed with the coal, while he passes much of the same kind of coal at a larger mine, the miners cannot be blamed for being dissatisfied, and trouble is the result.

Discrimination in favor of the larger mines shows favoritism. All mines, large and small, should be treated with the same severity and made to load clean coal if we would increase production and win the war. At our mine, we have been able to increase the output 20,000 tons, during the first six months of the present year, over the same period of last year. We have accomplished this with only 80 men. Let every mine, large and small, do its best to show the same increase, and we need not fear the results of the war.

Chambersville, Penn. JOHN BUGGY.

INQUIRIES OF GENERAL INTEREST

Accounting of Materials

Some time since, in connection with the discussion of the unwarranted waste of material in coal mining, there appeared an excellent letter in which the writer described a good system of accounting of all material ordered and sent into the mine from the supply house. I do not remember the name of the writer, but would like to ask that this subject be again presented for discussion by the readers of *Coal Age*, in the hope that there may develop a simple and accurate system of keeping account of the supplies on hand in the warehouse, as well as showing the kind and amount of material used each month in the mine. The record should also show who ordered the material, the date and where it was to be used. The blank form should be arranged in such a manner that credit can be given for all material returned as not used.

We are desirous of starting some such system at our mine, believing that it will greatly increase the economy of operation by causing the mine bosses to look after and keep track of what material is sent into the mine. Practical mine foremen should be able to offer some good suggestions along this line. What we greatly desire is to ascertain the most practical form of printed blanks that can be prepared for this purpose.

Carpenter Creek, Mont. OFFICE MANAGER.

We are glad our correspondent has referred to this matter of accounting of mine supplies, which is one of the most important features in operating economy. The letter to which he has referred was written by William Jardine, Universal, Ind., and appeared in *Coal Age*, Vol. 9, p. 265.

We quite agree with the suggestion that mine superintendents and foremen will be able to submit many valuable ideas in regard to keeping track of mine supplies, and shall be glad to receive and publish blank forms used both in the ordering and accounting of material, and learn of the system employed by the storehouse keeper and the mine foreman, in their accounting of material on hand and in use. The comparison of these systems will undoubtedly prove of inestimable value to those interested in coal-mining economy.

Calculating Velocities of Air

A question that has puzzled quite a few of us appeared, some time ago, in the *Science and Art of Mining*. The question reads as follows:

A roadway 7 x 6 ft. is ventilated part of the distance with a 20-in. trough and the remainder of the way by a brattice placed 3 ft. from one side of the entry. The velocity of the air in the trough is 416 ft. per min.; what are the velocities in the narrow and wide sides of the brattice, respectively?

In the *Science and Art of Mining*, the answer to this question was given as 50.4 ft. per min., for the velocity on the narrow side, and 21.6 ft. per min., on the wide side of the brattice. According to the rules given in the Scranton textbooks, the velocity of an air current varies as the square root of the sectional area of the airway; or, indicating the velocities and areas, respectively, by v_1, v_2, a_1, a_2, the formula given is:

$$v_1 : v_2 :: \sqrt{a_1} : \sqrt{a_2}$$

Applying this rule, however, does not give the answer quoted above. Kindly explain. STUDENT.

Edmonton, Alta., Canada.

In naming an airway, by giving its dimensions, it is customary to give the height of the airway first, and its width second. As a 6-ft. airway would be very narrow, however, we assume that this airway is 6 x 7 ft., or 6 ft. high and 7 ft. wide. The sectional area of the 20-in. trough or tube is $0.7854 \times 20^2 = 314.16$ sq.in., or 2.181 sq.ft., and the velocity of the air being 416 ft. per min., the quantity of air passing is $416 \times 2.181 = 907.2$ cu.ft. per minute.

The narrow side of the brattice being 6 x 3 ft., its sectional area is 18 sq.ft. The velocity of the air in this space is, therefore, $907.2 \div 18 = 50.4$ ft. per min. Also, the wide side of the brattice being 6 x 4 ft. has a sectional area of 24 sq.ft. The velocity of the air in this space is, therefore, $907.2 \div 24 = 37.8$ ft. per minute.

Regarding the rule given for the variation of velocity and sectional area, it should be stated that this rule applies only to the circulation of air in airways having equal rubbing surface and under the same pressure, which appears from the formula

$$p = \frac{ksv^2}{a}$$

In the present case, the *quantity* of air in circulation is constant and the velocity varies inversely as the sectional area, which appears from the formula

$$q = av$$

In determining the relation of the different factors of a circulation of air, it is necessary to study carefully the conditions presented by the formula, after eliminating all the factors that are constant. For example, the two formulas just given show clearly the following:

1. The rubbing surface and unit pressure (or water gage) in two airways being equal, the velocity will vary as the square root of the sectional area:

$$v \text{ varies as } \sqrt{a}$$

2. The sectional area and unit pressure being equal, the velocity will vary *inversely* as the rubbing surface:

$$v \text{ varies as } 1/\sqrt{s}$$

3. For the same sectional area, the velocity varies as the quantity of air passing:

$$v \text{ varies as } q$$

4. For the same quantity of air in circulation the velocity varies *inversely* as the sectional area:

$$v \text{ varies as } 1/a$$

EXAMINATION QUESTIONS

Hoisting Engineers' Examination, Pittsburg, Kan., May 15, 1918

Ques.—What are the duties of a hoisting engineer?

Ans.—A hoisting engineer should be on hand 15 or 20 min. before the time for his taking charge of the engine, observe carefully its condition and working and oil and adjust any accessible parts that may need attention. He should not leave his post, after assuming charge, until he is relieved by another engineer.

Before starting to hoist, the engineer should examine all brakes, rope fastenings, oil cups, valves and bearings. It is his duty to acquaint himself thoroughly with every part of the engine and know and answer promptly the signals given him from the mine. He must never move the cage except in response to a clearly understood signal, or after giving due notice of his intention to do so, by the proper signal.

When hoisting men he must use special care to observe the position of the cage in the shaft and not exceed a safe limit of hoisting. The engineer must not allow anyone to loiter in the engine room or himself converse with persons while operating his engine. He must never attempt to take charge of an engine if sick or otherwise incapacitated for duty.

Ques.—Explain the difference between a geared and a direct-connected hoisting engine, and state which you would prefer for Kansas mines and why.

Ans.—A geared engine is one in which the winding drum is operated by the revolution of a shaft carrying a spur or pinion the teeth of which mesh into a gearwheel on the drum shaft. In a direct-connected engine, the winding drum is operated directly by the engine, without the intervention of a pinion and gearwheel.

As the coal mines of Kansas are generally shallow, not exceeding 80 or 100 yd. in depth, geared hoisting engines are to be preferred, for the reason that this type of engine permits of a greater number of revolutions of the engine, for the same depth of hoist, and, therefore, gives the engineer better control of his engine.

Ques.—What horsepower must be developed to raise a weight of 400 tons 150 ft. in an hour?

Ans.—The theoretical power, which ignores the friction of the hoist, is, in this case $(400 \times 2000 \times 150) \div (60 \times 33{,}000) = 60.6$ hp., assuming the short ton of 2000 lb.

Ques.—How do you determine the horsepower of a tubular boiler?

Ans.—The heating surface of this boiler, which is the entire surface exposed to the flame and gases of the fire and includes the tubes, boiler plates and boiler heads so exposed, must first be calculated. For return tubular boilers the ratio of heating surface to horsepower varies from 14 to 18. Therefore, to obtain the horsepower of such a boiler, divide the heating surface, in square feet, by a constant, which may vary between these limits.

Ques.—What are the advantages and disadvantages of using the water from the exhaust pipes of a hoisting engine, in a boiler?

Ans.—The advantage of using the water condensed from the exhaust steam of an engine is the saving thereby effected of the heat in the exhaust steam, which would otherwise be lost but which, in the condensation, passes into the feedwater and assists in raising its temperature.

One disadvantage in the use of the water from exhaust steam and feeding it into the boilers without sufficient treatment, is due to the oil contained in the exhaust steam. This oil is taken up by the steam in the cylinder of the engine and if permitted to remain in the feedwater and enter the boiler may result in coating the boiler plates and tubes with a film of oil, which would prevent the contact of the water with the metal and cause the overheating of these surfaces and the bagging of the plates or the formation of blisters.

Another disadvantage is experienced when the oil saponifies under the action of the alkali or alkaline earth contained in the feedwater. This is more apt to happen when an impure mineral oil is used in the cylinder of the engine, as the presence of vegetable or animal matter is necessary to cause the action.

In order to derive the benefit arising from utilizing the heat of the exhaust steam to raise the temperature of feedwater, the latter should be passed through an oil filter, consisting of a layer of charcoal or coke over a layer of hay, which will absorb the most of the oil contained in the feedwater, provided the material of the filter is renewed from time to time, as required.

Ques.—What is the number of revolutions per minute, of an engine having a stroke of 3 ft. 6 in. when the piston speed is 900 ft. per min.?

Ans.—Each revolution of the engine corresponds to a double stroke or a piston travel, in this case, of 7 ft. The speed of the engine is, therefore, $900 \div 7 = 128\frac{4}{7}$ r.p.m.

Ques.—What, in your opinion, is the best system of hoisting signals in use in the coal mines of this state?

Ans.—One bell or whistle signifies to stop if the cage is in motion; when the cage is at rest the same signal signifies to hoist the cage if the signal is given from the shaft bottom or lower the cage if given from the surface or upper landing. Two rings or whistles signify to lower the cage. Three rings or whistles signify men are ready to get on cage and are waiting for the engineer to signal them by one ring or whistle that he is ready, after which one ring to hoist or lower, as the case may be, requires the engineer to use extra caution if men are on the cage. Four rings or whistles should indicate that the cage is to be hoisted or lowered slowly and with caution, owing to the uncertainty of its load. *Coal Age, Vol.* 10, *p.* 85.

COAL AND COKE NEWS

Uniontown, Penn.

Fifty thousand tons of coal were lost last week by a coal car shortage which has reached an acute stage in the Connellsville coke regions, according to a statement issued at the office of the regional fuel administration. There was an added shortage of 1274 cars over the week preceding, and that fact coupled with the shifting to coal shipment of a number of Frick coke plants due to the demands for coal by the Clairton byproduct works, created a situation which held the attention of both the fuel and railroad administration representatives in this region. The region's coke output aggregated 316,381 tons, while the coal figures showed a production of 199,957 tons.

W. L. Byers, manager of production for the Connellsville region fuel administration, has issued an appeal to miners and coke drawers to make claim for deferred classification to the draft authorities. He told the men that in their work they were rendering as valiant a service to the country as if they were in uniform, and that the region could ill afford to lose many of its coke workers. Employers were urged to coöperate with the men in the preparation of the necessary affidavits. The new age limits of the draft will take in the great majority of the workers in the coke region, and Mr. Byers' appeal was issued to assure the men that no taint was attached to the application for deferred classification.

Charleston, W. Va.

Coal mine operators from all parts of the New River and Winding Gulf section gathered here last Monday to devise ways and means of speeding up the production of coal, that being the object of the meeting, over which C. C. Beury, chairman of the New River Association, presided.

As the first speaker, J. A. Scott, of the New River Company, outlined what the production committee of the National Coal Association was endeavoring to do to aid the United States Fuel Administration in its efforts to increase the output of coal. Mr. Scott favored immediate action on any plan which would result in an increased production.

E. E. White, president of the E. E. White Coal Co. and chairman of the Winding Gulf Association, as well as the newly appointed production manager for the Winding Gulf and New River districts, briefly outlined some of the plans for increasing production he had in mind, but emphasized the necessity of coöperation of not only operators and miners, but the public in general in getting out coal.

J. D. Parrish, superintendent of the Charleston & Ohio R. R., assured the operators present that he appreciated the cooperation of all of them and would be glad to have any suggestions as to how the car supply might be bettered. He said the railroads hoped soon to be able to furnish a car supply sufficient to meet all requirements.

Sanction was given by the association to a plan to establish a production office in Charleston with T. L. Lewis, secretary of the New River Association, in charge, Mr. White, of course, being the executive of the committee. The office has already been organized and plans set on foot to wage a campaign for greater production, operators present pledging their support.

Pocahontas and Tug River Districts

The Pocahontas and Tug River districts are recoving somewhat from the slump which followed closely on the heels of the banner week of July 29. While, of course, those districts have felt to a slight extent the car shortage, yet it has never been felt to the same extent as the inability to get the miners to put in more time, a problem which has been worked out partly although the mines in the southern part of the state are far from having a quota of miners large enough to meet the capacity of all mines. More negro labor has been used in the mines in the southern tier of counties than anywhere else, and many colored men have been drafted. It is hoped, however, by refraining from frequent celebrations to gain more time to be used in mining coal.

Kanawha District

Lack of cars is still playing hob with the production of coal in the Kanawha district. While assurance has been given by the Charleston & Ohio Ry. and the Fuel Administration at Washington, little relief has been afforded so far and consequently it is certain that the mines in this region will fall far below last month in the total output. The total production in the Kanawha district last week was 170,431 tons, a slight increase over the previous week, but below the same period of last month. Just how serious the car shortage is may be gathered from the fact that 2500 hours were lost from this cause. Although a less number of hours were worked the cutters had enough coal cut to increase the total tonnage. Hours lost from labor shortage amounted to a total of only 183.

New River District

The New River District, generally speaking, has been one of the few in the State of West Virginia which has not suffered from a poor car supply, but even that district was retarded slightly this week and last week on one or two days by an absence of cars. While not experiencing any such trouble now, the mines in the New River field have been hampered in getting out coal by poor power supply. For a time the operators never knew at what moment their power would be cut off. Now, however, there seems to have been an improvement, but in order to insure a reliable supply in the future there has been some talk of employing an electrical expert to work with the operators and a representative of the power company, in order to determine just where any lack of efficiency might exist.

Fairmont District

The continuation of the poor supply of cars in the Fairmont district over a period beginning about the 1st of the month has kept down the output, and conditions may almost be compared to those prevailing in the district last winter, the run of cars not averaging much over 800 during the first three weeks of the month. Each week the supply starts off well enough, but the experience of Fairmont district mines is that before the week is over the number of cars furnished is far below requirements.

Late placing of cars is also retarding production. For instance, while there were 1732 cars in the Fairmont district Monday of this week, many of them were placed so late that no miners were on hand to load them. Conditions in general did not point to any betterment in the car supply in the field during the week. Requisition had to be made to all mines for railroad fuel this week to meet the shortage of last week, when not even enough cars were furnished to load railroad fuel. During the first part of the week the shipment of coal eastward was limited to 900 cars a day. That gas coal should not be used for railroad fuel in view of the necessity for byproduct coal, is the belief among operators of the Fairmont district.

Winding Gulf District

If there has been any failure on the part of Winding Gulf District mines it has not been due to any lack of effort on the part of those in the industry, but rather to transportation difficulties. With six engines of the largest type in commission, the Virginian Ry. gives promise of being able to handle more cars in and out of the region. It is probable that even four more engines will be added to the motive power equipment in the Winding Gulf region. More coal is being mined in the Winding Gulf region as a result of get-together efforts of operators and men. That a sincere, serious effort is being made by the Chicago & Ohio Ry. to supply more cars is the statement of Superintendent Parrish, of Huntington, who has expressed the belief that much would be accomplished if operators and miners would seek a closer relationship with trainmen.

Dallas, Tex.

Plans are being worked out with the approval of the officials of the Federal Fuel Administration in Texas by which it is hoped to secure coal from the mines in Mexico just across the Rio Grande sufficient in quantity to care for all local needs in Texas. Manuel F. Palacio, of Saltillo, Mexico, has gone to Detroit for a conference with Henry Ford relative to securing motor trucks in sufficient number to transport needed coal from the Mexican mines. Mr. Palacio carries with him letters from Governor Mireles of Coahuila, Mexico, and also from Governor Hobby of Texas, setting forth the situation and giving indorsement to the plan.

Mr. Palacio proposes to secure motor trucks and transport coal from the mines in Mexico located only a few miles south of the Rio Grande opposite Laredo and Eagle Pass. The coal of these mines, it is claimed, is equal in quality to the best Pennsylvania anthracite, and General Carranza and Governor Mireles have given permission for the mine operators to transport the coal to the border for the use of the people of the United States. These mines are just being developed and could be made to increase their output greatly if a market for the coal is found in the United States and means for transporting the coal to the border is provided.

Present prospects in Texas are that the people of the state will have to depend on wood and lignite for heating purposes unless a way is provided for getting coal from Mexico. The coal in Mexico can be produced at a low cost and the expense of transporting it to the border if motor trucks can be had will not be great. From the border the coal can be hauled to all parts of Texas and other states by rail.

PENNSYLVANIA

Bituminous

Uniontown—Deed for the sale of an undivided one-half interest of 15 acres of Springhill township Fayette County, coal to the Hecla Coal and Coke Co., was placed on record here recently. The sale was made by Charles H. Seaton and Lizzie S. Bowman for $60,255, or at an average of more than $800 per acre. The other half interest is involved in the J. V. Thompson estate. The Crystal mine of the Hecla company adjoins the new field.

Uniontown—Damage to the extent of $50,000 and forced suspension of the mine was the toll of a fire at the Gates tipple of the H. C. Frick Coke Co. The fire is supposed to have been started by a bolt of lightning during an electrical storm. The tipple itself is mostly of steel construction and was but little damaged, but the shaft timbers were burned. During the same storm the mine of the Plumer Coke Co. located nearby, was flooded. The Gates mine fronts the Monongahela River and is now shipping its output by water to the Clairton byproducts plant.

Pittsburgh—The Crucible Coal Co. is negotiating with the Cornell Coal Co., of Creighton, for the purchase of the holdings of the latter company.

Blairsville—The Brown Coal Co., of this city, has begun work on the reopening of the old Hart mine near Clarksburg. The company has made arrangements to dump its coal off the Lowther Coal Co. tipple at Clarksburg.

Evans City—The Big Creek Coal Mining Co. has begun improving its mining town at Wahlville, near here. All the houses are being wired for electricity and the current will be furnished by the company. Water is also being piped into the houses and drilled wells will replace the old reservoir. The production of the mine was recently increased by the installation of electric power for mining machines and haulage systems.

Anthracite

Hazleton—On Aug. 26 the Wyoming Valley Water Supply Co. received permission from the Commonwealth to construct a new reservoir at Tomhicken. This will permit

the abandonment of the old dams, which are over rich anthracite coal seams that the Lehigh Valley Coal Co. wishes to mine.

WEST VIRGINIA

Lannat—The No. 4 Superior Coal Co. is building a new plant here and will install electrical equipment. The company was organized by W. J. Luttrell, J. W. Reedy, C. R. Luttrell and others.

Clarksburg—Extensive coal property, in which Pittsburgh business men are interested in part, located on Shinn Run, Harrison County, will be developed by the Shinn Run Coal Co., incorporated by F. P. Patterson, H. T. Klingensmith, E. C. Peeler and N. K. Taylor, all of Pittsburgh, and by Guy A. Hardesty, of Shinnston. The company has an authorized capital stock of $50,000.

Clarksburg—The leasehold on the Titchnell coal properties at Meadowbrook, near here, held by the Madigan-Johnson Coal Co., has been sold to new interests. It is understood that the new owners are planning to increase operations at the plant.

Lynch—The United States Coal and Coke Co. is planning for extensive improvements and additions at its coal mining properties near here, to provide for increased operations. At the present time the works have a capacity of approximately 10,000 tons daily.

Charleston—The Columbia Coal Co., Union Building, is planning for the installation of mining machinery, including electric equipment for operation, at its properties, for the development of about 300 acres of coal lands.

Huntington—That there exists an urgent need for at least 7500 more men to man the coal mines of West Virginia is the opinion expressed by Agent John G. Wilson, of the Huntington branch of the United States Employment Service. It will be necessary to replenish the ranks of the miners depleted in various ways in order to bring the mines of the state up to their fullest capacity. With the addition of 7500 men, the employment agent estimates that 75 mines could be operated, each man producing anywhere from 16 to 20 tons during an eight-hour day.

KENTUCKY

Sturgis.—The machine shop and stables, including livestock, of the West Kentucky Coal Co. Mine No. 2, at this place, were recently destroyed by fire. The damage was estimated at about $10,000.

Hazard—The Midland Mining Co., which recently filed notice of an increase in its capital from $100,000 to $150,000, to provide for expansion is now developing approximately 1800 acres of coal properties in the Hazard district. H. E. Bullock is president.

ILLINOIS

Danville—A new strip mine will be opened by White, Barger & Co., four miles southeast of this city. The new mine will be in the Grape Creek district, the opening of which mining field placed Danville in a leading place in the mining world. The seam runs 7 ft. 2 in. to 8 ft. 7 in., with an overburden of from 12 to 18 ft. of earth. C. J. White, a pioneer worker in the strip mining field, will be interested in the new company. He installed the Beech Flats mine at Rush Run, Ohio, said to the largest strip mine in the United States. This mine is owned by Danville capitalists. W. G. Hartshorn will be the president of the new company. He is a worker of a number of years' standing in the mining field, having opened ten mines in Illinois, three in Ohio, two in Alabama and one in Indiana. A. W. White will be the active manager of the new project and John W. Barger will also be active. The mine will cater to Danville trade, wagon business to have first attention.

Harrisburg—Unsatisfactory power supply in the Harrisburg and Carterville districts has led to a suggestion, which the operators are considering that Keokuk dam power be used. At present power is being obtained from an operating company, which generates its own power and supplies other operators with the surplus.

Carlinville—It is reported that the Union Pacific R.R. is planning to open up extensive coal fields in this section of Illinois. A field of 60,000 acres east and southeast of town is said to have been bought up for the company, which is expected to sink three big mines, one near Moore's branch, another southeast of town and a third to the south. The field is held in the name of the Illinois Union Coal Company.

Springfield — Efforts of Sangamon county florists and proprietors of greenhouses have resulted in a modification of the order issued some months ago by the National administration limiting them to 50 per cent. of coal during the year 1918. The modification, which applies to the entire State of Illinois, permits them to have a 100 per cent. supply where in the opinion of the state fuel administration it does not interfere with the coal supply of industries working on war orders, provided that they use one-half of their coal in the form of screenings.

Springfield—The tipple of Citizens' Mine A collapsed a few days ago and threw nearly 250 men out of employment and curtails production in Sangamon County 1500 tons a day until it can be repaired. No one was injured. While repairs are being made limited production is maintained by hoisting through Mine B, the galleries of which connect with those of Mine A.

Gillespie—The order forbidding shipment of coal to coal-producing communities is causing trouble here. The Superior Coal Co. is a large producer here but does not sell for home consumption. A local mine is being sunk, but it will not be ready for several months. C. T. Woodward, county fuel adminstrator, is looking into the situation. The same state of things exists at Greenfield.

Decatur—Decatur mines are working 100 per cent. efficiently. They are from 30 to 60 days behind in their coal orders and are now hoisting 1000 tons of coal daily, which is their capacity. Local manufacturers are storing large volumes of coal and there is every indication that householders will do the same. No coal is going out of Decatur and Macon Counties. The fuel situation in general for the coming year is regarded as favorable, and this means much, as Decatur is a large industrial city. The Wabash Railway Co. alone has stored 30,000 tons of coal in its Decatur yards.

Carlinville—A new coal shaft is being sunk by local capital, the idea being that the new mine will be able to supply coal for local consumption by the opening of the winter season. The new mine is located near the Carlinville Clay Co.'s plant, south of town. A. H. Bell is the president and C. H. McIntosh, secretary.

Panama—The loss of the Panama local of the United Mine Workers through the alleged dishonesty or dereliction of its officials will not be as great as was at first thought, according to a report of an investigating committee composed of A. E. McReaken, James Hicks and Frank Hartman. The shortage was at first estimated at $15,000. A good deal of the money has been repaid and it is understood the loss will not be more than $3000. A warrant has been issued against a former official who is missing.

Edwardsville—Coal operators in this section are experiencing considerable difficulty on account of the scarcity of water. Continuous operation of the mines through the summer, coupled with the drought, which has been only partially broken, has depleted the lakes and ponds upon which most of the mines depend. Most of the operators have had to resort to tank cars. About 125,000 gallons are being "tanked" out of Alton each day.

ARKANSAS

Fort Smith—W. J. Pendergrass, of this city, and associates have organized the Majestic Coal Co. for the purpose of opening a 600-ton mine, two miles from Midland. Application to open the plant has been approved by the Fort Smith fuel administration. The company owns 250 acres of coal land and has a lease on 300 more acres. The coal is 3 ft. thick and the property is located a half mile from the Midland Valley railway tracks. It is the intention of the corporation to begin sinking a slope as soon as the application is approved by the National Fuel Administration.

Foreign News

London, England—Dissatisfied with a wage award which they considered unfair, a large number of miners in the Yorkshire coal fields went out on strike on Aug. 22. The strike lasted for only one day, as the men returned to work after the employers granted all demands.

Edmonton, Alta.—Mines in this neighborhood are largely idle for want of orders. Twin City Coal Co.'s mine closed down for a week and work at other mines is reported slack. In spite of warnings issued, the majority of people are putting off buying in the hope of prices going down by reason of more men and teams being available during the winter. The Dominion Government is blamed for lack of definiteness in handling the coal situation as in all that has been done to encourage the East to buy Western coal there has been some sort of qualification which has discounted the recommendations.

Personals

Richard Nesson, of Springfield, Ill., has been appointed mine inspector for the Litchfield district, succeeding Thomas A. Lewis, who resigned to take up another line of work.

W. B. Gathright, for the past 14 years connected with the Louisville office of the St. Bernard Mining Co., of Earlington, Ky., has been named assistant manager and sales agent succeeding the late Julius Bierach, who died early in the month.

Vance McCarty, for the past 12 years manager of the Pittsburgh branch of Edward R. Ladew Co., Inc., manufacturer of leather belting, has been appointed general sales manager of the company, with headquarters in the New York office, 54 Franklin Street.

Howard Marvin, formerly manager of Boyts Porter and Company, of Connellsville, Penn., manufacturer of the Yough mine pumps, has been made general manager of the International Clay Machine Co., of Dayton, Ohio, manufacturer of mining machinery.

Obituary

Albert E. Waggle, of Monroeville, Penn., mine superintendent at the local mine of R. H. Cunningham, was killed on Aug. 14 by the premature explosion of a blast. Mr. Waggle was 55 years of age.

Charles E. Gartside, a pioneer Illinois coal operator, died last Wednesday at St. Luke's Hospital. He had been sick four months. He was 68 years of age. Formerly he was for 40 years president of the Gartside Coal Co., succeeding his father, Joseph Gartside, founder of the company. He retired several years ago.

Recent Coal and Coke Patents

Mechanical Stoker. A. G. Elvin, A. B. Fahnestock and F. H. Clark, New York, N. Y., 1,267,644. May 28, 1918. Filed Sept. 20, 1917. Serial No. 192,260.

Coal Washing Apparatus. L. L. Llewellyn assignor to Pittsburgh Coal Washer Co., Pittsburgh, Penn., 1,267,565. May 28, 1918. Filed Jan. 5, 1918. Serial No. 210,415.

Supporting and Adjusting Mechanism for Mining Machines. N. D. Levin, assignor to Jeffrey Manufacturing Co., Columbus, Ohio, 1,267,675. May 28, 1918. Filed Sept. 30, 1911. Serial No. 652,099.

Regenerative Coke Oven. E. Coppée, Brussels, Belgium, 1,267,380. May 28, 1918. Filed July 28, 1914. Serial No. 853,603.

Furnace Regulator. C. H. Stalker, Ann Arbor, Mich., 1,267,601. May 28, 1918. Filed Oct. 16, 1916. Serial No. 125,845.

Manufacture of Fuel Blocks or Briquets. E. R. Sutcliffe, assignor to Pure Coal Briquettes, Ltd. Cardiff, Wales, 1,267,711. May 28, 1918. Filed Mar. 27, 1915. Serial No. 17,504.

Gas Producer. J. W. Hornsey, assignor to General Reduction Gas and Byproducts Co., a corporation of Delaware, 1,267,410. May 28, 1918. Filed July 3, 1914. Serial No. 848,704.

Mine Elevators, Car Lock for. S. Galli Breegy Hill, Kan., 1,268,001. May 28, 1918. Filed Jan. 4, 1918. Serial No. 210,305.

Smoke Consuming Furnace. O. D. Orvis, New York, N. Y., 1,267,446. May 28, 1918 Filed Oct. 23, 1916. Serial No. 127,115.

Mining Machine. R. E. Dunlop, assignor to Jeffrey Manufacturing Co., Columbus, Ohio, 1,267,992. May 28, 1918. Filed July 28, 1914. Serial No. 853,644.

Stoking Mechanism. H. L. Moore, Pittsburgh, Penn., 1,267,439. May 28, 1918. Filed June 19, 1916. Serial No. 104,628.

Coal Washing Trough. G. E. Alleman, Shoemakersville, Penn., 1,268,531. June 4, 1918. Filed Aug. 25, 1917. Serial No. 188,098.

Dumping Car. A. Lichtenstein, Brooklyn, N. Y., 1,268,588. June 4, 1918. Filed Mar. 21, 1917. Serial No. 156,354.

Method of Mining Coal. A. H. Kuhn, Pittsburgh, Penn., 1,268,584. June 4, 1918. Filed Aug. 14, 1914. Serial No. 856,850.

New Incorporations

Adams, N. Y.—The Adams Coal Co. has filed notice of an increase in its capital from $35,000 to $50,000, to provide for expansion.

Whitesburg, Ky.— The Kentucky-Harlan Coal Co. Capital, $100,000. To develop coal properties in Harlan County. George F. Ryan is the principal incorporator.

Wellsburg, W. Va.—The Ohio Valley Fuel Co. Capital, $100,000. To operate coal mines in the Ohio Valley section. J. K. Wells is the principal incorporator.

Pittsburgh, Penn.—The Victory Coal Mining Co. Capital, $50,000. To operate coal properties in the Pittsburgh field. J. Fred Morlock, of Buffalo, N. Y., is treasurer.

Wheeling, W. Va.—The Ohio Valley Fuel Co. Capital, $10,000. To develop coal lands in Brooke County. Incorporators: J. K., M. L. and S. G. Wells.

Cassville, W. Va.—The Cass Hill Coal Co. Capital, $50,000. To operate coal properties in the vicinity of Cassville. Incorporators: R. L. Stallings, C. C. Hetzel and G. H. Hetzel.

Wilkinsburg, Penn.—The Wilkinsburg Domestic Coal Co. Capital, $50,000. To develop coal properties in the Wilkinsburg district. S. R. Hall, of Jeannette, is the principal incorporator.

Charleston, W. Va.—The Harmon Coal Co. Capital, $50,000. To mine for coal in the Charleston field. J. C. Gary, James E. Staton and A. F. Harmon are the principal incorporators.

Kittanning, Penn.—The Pittsburgh & Fennelton Coal Co. Capital, $50,000. To operate coal properties in the vicinity of Kittanning. C. H. Dyer, of Pittsburgh, is the principal incorporator.

Pittsburgh, Penn.—The Lebanon Block Coal Co. Capital, $25,000. To develop coal lands in the Pittsburgh field. William M. Swart, of Dormont, is the principal incorporator.

Jackson, Ky.—With a capital of $60,000, the Panhandle Coal Co. has been organized to develop mine property. W. O. Bender, E. O. Bailey and E. I. Hawkins are the principals.

New York, N. Y.—The Adelphi Coal Co., Inc., a Maryland corporation, has filed notice of authorization to operate in New York with a capital of $50,000. P. L. Vannorden, 1 Broadway, will act as local representative.

Chattanooga, Tenn.—Loomis & Hart Mining Co., capital $10,000, has been incorporated by Gaston Raoul and others, to operate coal mine on Raccoon mountain, to supply coal for the Odorless Refrigerator Co., of Chattanooga, with which Raoul is connected.

Hazard, Ky.—The Midland Mining Co., Lexington, has secured 1800 acres of land near Hazard and plans early development. The organization is capitalized at $150,000, having recently increased its stock from $100,000. D. L. Pritchard has been named construction engineer and H. E. Bullock president.

Henderson, Ky.—The Uniontown Coal Co., capital $100,000, has been incorporated by C. C. Porter, president, Dandridge Spottswood, vice-president and general manager, and J. H. Turner, secretary-treasurer. Henderson, Ky., will be headquarters of the company, while the officers are all Nashville men. The company has secured an operating mine at Uniontown, Ky.

Chattanooga, Tenn.—The Laurel Fork Lumber and Coal Co., capital $60,000, has been incorporated by Albert Crumley, H. M. Gordon, John Morrow and others. The Suck Creek Coal Co., also of Chattanooga, has increased its capital from $50,000 to $200,000. At Huntsville, Tenn., the Big Spring Coal Co. has been chartered with a capital of $12,000 by J. T. Prather and others.

Industrial News

War, W. Va.—The Bradshaw Coal Co. is building 60 houses for miners at its plant here, and also putting in a good deal of new electrical equipment.

Clarksburg, W. Va.—A 150 kw. electric plant is to be installed by the Valley Falls Fuel Co. The company expects to have the new power unit in operation within the next two months.

St. Louis, Mo.—St. Louis will begin at once the storing of coal on the levee at the foot of North Market St., adjacent to the new municipal dock, from which a track will be laid. A stock of about 15,000 tons will be placed there as a reserve.

Hawesville, Ky.—The Central Kentucky Block Coal Co., which was incorporated with a capital of $200,000 a short time ago, plans development of 2000 acres of land, for a daily capacity of 500 tons, and plans installation of equipment.

Lexington, Ky.—George F. Ryan and others are behind the Kentucky-Harlan Coal Co., according to report from Whitesburg, this concern figuring to develop coal mines and townsite near Harlan with capital of $100,000.

Lexington, Ky.—Jack Bryan and Louis Young, of Lexington, have purchased the Ivy Mill Coal Co. mines at Harlan, Ky., on Big Black Mountain, and plan extensive improvements and developments of the property.

Bluefield, W. Va.—Not only is new equipment being added to the Rolfe plant of the Pocahontas Fuel Company, but 37 new houses have been built. New equipment consists of 100 new mine cars. At the Cherokee plant of the company, 27 new miners' houses have been built.

Springfield, Ill.—The Springfield Board of Education has awarded to the Scott Coal Co. the contract for coal for the coming winter at these prices: Mine-run, $3; pea, $3.20; lump, $3.20; duff, $2.55; egg, $3.20, and screenings, $2.70. The Scott company was the only bidder.

Kimball, W. Va.—Many improvements are being made by the Houston Colliery Co., of which E. L. Stafford is superintendent, at the company's plant here. A new power house is being built and equipped with automatic stokers under the boilers; at the same time 25 miners' houses and a club house are being erected.

Whitesburg, Ky.—The Powell Coal Co., recently organized with a capital of $50,000, plans to develop lease secured from the Eureka Elkhorn Coal Co., handling two mine openings, and daily capacity of 500 tons. Material has been secured to erect tipple. Power plant and mining equipment will be installed.

Huntington, W. Va.—Announcement has been made by the Chesapeake & Ohio R. R. that figures for coal loading for the month of July show that all records for this work have been broken, a total of 3,145,105 tons having been loaded during this month. This amount is approximately 300,000 tons in excess of any previous month.

Chicago, Ill.—The Cement-Gun Construction Co. has recently completed the application of a waterproof gunite lining to the air shaft of the No. 11 mine of the Old Ben Corporation, Christopher, Ill., and is now engaged in doing the same work for the J. K. Dering Coal Co. at both the main shaft and air shaft of the new mine at Eldorado, Ill.

Pittsburgh, Penn.—In connection with extensive improvements at its Wheatland works, the Pennsylvania Railroad Co. has awarded a contract for the construction of a large new coaling station, including ash-handling department, the entire work being estimated to cost $150,000. The Crowell, Lundoff Little Co., Cleveland, Ohio, is the contractor.

Briceville, Tenn.—The Cross Mountain Coal Co., main office Knoxville, Tenn., which recently increased its capital from $400,000 to $500,000, plans development of 3000 acres of land, for a daily output of 600 tons. Willis P. Davis, formerly of Louisville, and connected with some large iron plants of Knoxville, is manager of the company.

St. Louis, Mo.—The Walter A. Zelnicker Supply Co. recently secured the services of Merle G. Peterson, who is now connected with the company's Chicago sales force at 428 First National Bank Building. Mr. Peterson was formerly associated with the Niles-Bement-Pond Co. and Pratt & Whitney Co. His father, Carl Peterson, is western representative of Baldwin Locomotive Works, with offices at Chicago, Illinois.

Crooksville, Ohio—An order has been issued by the federal director of railroads changing the contract of a small line 3.7 miles in length running between Sayre on the Zanesville & Western to San Toy. Formerly the line was controlled by the Baltimore & Ohio and a long route was covered to permit the coal mined on the line to be shipped to the market. Now the coal will go out over the Zanesville & Western.

East St. Louis, Ill.—The contract for supplying the city's fuel repirements from Aug. 1 to May 1 has been let to Frank Maule at $4.20 a ton, subject to any increase caused by a Federal order or an increase in freight rates. The contract calls for 2-in. screenings. The Cahokia Coal Co. and the John T. Maule Co., each bid $4.40 a ton. Last year the price was $3.10 and $3.25 a ton. The consumption is about 800 tons.

Williamson, W. Va.—Improvements costing $40,000 are being made to the plant of the Standard Thacker Coal Co. at Chattaroy under the direction of L. G. Bray, general manager. By such improvements it is hoped to increase the capacity of the plant 10,000 tons annually, giving a total production of 75,000 tons a year. Work was started on these improvements on July 1, and it is believed that they will be completed by Oct. 1.

Charleston, W. Va.—There was a total of 44 deaths in West Virginia during July as a result of accidents in the mines. Four of such deaths were outside the mines and forty within the mines. Twenty-five deaths were caused by falling roof and coal. Eight miners met their deaths on or under mine cars, motor cars killing four. Live wires caused the death of three. There were seven deaths each in Districts 13 and 14. Thirty Americans were killed, the rest being foreigners.

Toledo, Ohio—Considerable activity prevails at the docks of the lower lake ports, which is shown by the records of loadings at the Toledo docks of the Hocking Valley and Toledo & Ohio Central railroads. The Toledo & Ohio Central docks during the week ending Aug. 17 loaded 92,000 tons as compared with 78,000 tons the previous week, making a total of 1,120,000 tons for the season. The Hocking Valley docks during the same week loaded 197,837 tons as compared with 169,928 tons the previous week, making a total of 2,482,000 tons for the season.

Indianapolis, Ind.—Shipments of coal to 41 industrial plants in Indiana have been discontinued because these plants have been stocked with a sufficient supply of coal to meet needs for several weeks. The order was issued by R. L. Flood, of the quartermaster's corps, assigned to coöperate with the Indiana Fuel Administration in establishing priority shipments of coal to industries engaged in war work. The order was made following instruction which had been received by A. M. Ogle, director of state distribution of the Federal Fuel Administration, that plants with excessive supplies of coal should receive no more coal. It is said that some plants have enough coal on hand now to operate for a year.

Indianapolis, Ind.—A tentative plan has been drawn up regarding the distribution of coal among the 54 cities of Indiana which are entitled to receive anthracite. The plans were agreed upon by Alex R. Holliday, assistant fuel administrator of Indiana, and H. N. Pease, western representative of the anthracite department of the Federal Fuel Administration. Officials of the state administration state that it will be impossible to divert any of the anthracite coal from any of the 54 cities which are designated by the order.

Pineville, Ky.—The property of the Federal Coal Co., which owned and operated a number of coal mines on Straight Creek, was sold on Aug. 19 by Judge J. M. Gilbert, as Special Master under a decree of the United States District Court of eastern Kentucky, for $1,400,000. The stocks and bonds of the company are owned by Louisville and Chattanooga parties, who organized the Federal Coal Co., to take over the property of the Continental Coal Corporation, which filed a petition in bankruptcy. Disagreements arose between the Louisville and Chattanooga interests concerning the management of the property under the reorganization, and the property was again thrown into court. Several months ago a division of the property was made as between the Louisville and Chattanooga interests, the latter taking the property on the Left Fork of Straight Creek, the Louisville interests taking the properties on the Right Fork, which embraced the property of the old Straight Creek Coal and Coke Co., which was owned by Louisville capitalists and by them sold to the Continental Coal Corporation. The latest sale was made to C. M. Preston, of Chattanooga, and Thurston Ballard, of Louisville, representing the two interests. The property which goes to the Louisville interests is now being operated as the Liberty Coal and Coke Co., under the management of Judge M. H. Barker, of Louisville.

MARKET DEPARTMENT

Weekly Review

Coal Output Shows Further Decrease—Poor Car Supply and Layoffs Keep Down Tonnage—Reserve Stores of Coal To Be Limited—Northwest Shipments Show Improvement —Market Conditions Quiet—Nonessential Industries Have Poor Outlook for Fuel

PRODUCTION of bituminous coal continues to decrease in spite of all efforts made by operators and Fuel Administration officials to speed up production. The causes for the poor output still remain the chronic ones of insufficient cars and slacker labor. Many of the producing districts report that their operations have been forced to suspend for periods ranging from half a day to four days because they were given no cars to load. Not only does this poor transportation situation result in meager tonnages, but patriotic labor that is anxious to prove its good intentions toward the country at the present time is denied the opportunity to work steadily. Then, again, pay day at many mines is still followed by an increase in the percentage of absentees, men whose craving for a spree or a layoff is stronger than the pleas made by speakers throughout the mining regions that coal is needed to win the war.

During the week ended Aug. 17 inadequate car supply and labor shortage combined to keep the output of soft coal down to 11,910,000 net tons, which is far below the weekly figure of 14,270,000 net tons considered necessary to meet essential demands. It is a foregone conclusion that some drastic policy will have to be put into effect if war work is not to suffer, and an intimation of the manner in which the situation will be met is indicated by the announcement of the Fuel Administration that stocks of steam, byproduct and gas coals are not to be hoarded, regardless of whether the consumer with the reserve stores is in a preferred or nonpreferred industry. Mandatory limits have been set on the number of days' supply of fuel which may be stored by industries in different sections of the country, and the Fuel Administration will see to it that these limits are not exceeded.

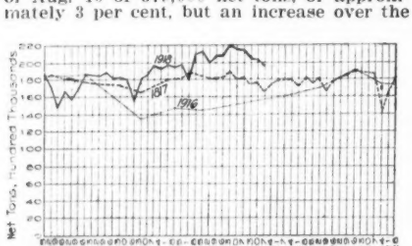
Anthracite production during the week ended Aug. 17 totaled 1,924,800 net tons, which is not only a falling off of 127,133 net tons compared with the week of Aug. 10, but is 63,800 net tons under the quantity mined in the same week of last year. Inadequate labor forces are chiefly responsible for the loss in anthracite output. Since April, 1918, to date, however, the total production of hard coal amounts to 39,634,247 net tons, an increase of 723,969 net tons over the quantity mined in the like period of 1917.

The movement of coal to the Northwest shows signs of improvement, though the tonnage is still considerably behind pre-season estimate. Bituminous coal loaded on vessels at lake docks during the week ended Aug. 17 amounted to 1,109,611 net tons, an increase over the week preceding of 85,192 net tons. Supreme efforts will be required if the Northwest requirements are to be met before the close of the lake season.

Market conditions are quiet in both the steam and domestic grades. Dealers' stocks are generally quite low, but there is some coal in the yards of retailers and consumers are still placing orders. The heavy storage demand from domestic consumers has been satisfied to a large extent, and there seems to be little danger of a serious shortage in domestic fuel next winter. However, conservation measures are the order of the day, and there will doubtless be further curtailment of labor, transportation and fuel in activities that fail to come within the classification of strictly essential. It is probable that many such concerns will find it necessary to suspend operations next winter.

COAL PRODUCTION

The decrease in production which began after the record week of July 13 not only continued during the week of Aug. 17, but the output during that week also fell below 12,000,000 net tons for the first time since June 22. Preliminary estimates place production (including lignite and coal coked) during the current week at 11,910,000 net tons, a decrease compared with the week of Aug. 10 of 379,000 net tons, or approximately 3 per cent, but an increase over the



corresponding week of 1917 of 1,597,000 net tons, or 15.4 per cent. Production necessary during the balance of the summer weeks to make past deficit now amounts to 14,270,000 net tons, 247,500 net tons or approximately 21 per cent. in excess of the average weekly production during the coal year to date. The average production per working day is estimated at 1,985,000 net tons, a decrease compared with the average daily summer requirements of 92,000 net tons or 4.5 per cent. but 266,000 net tons or 15.4 per cent. in excess of the average daily production during the week of Aug. 17, 1917.

Anthracite Production.—Production of anthracite in the United States during the week of Aug. 17 is estimated at 1,924,800 net tons, a decrease compared with the week preceding of 127,133 net tons or 6.2 per cent., and a decrease compared with the current week of last year of 63,800 net tons or 3.2 per cent. The average daily production during the week of Aug. 17 is estimated at 320,800 net tons, 4.5 per cent. behind the average daily production during the coal year to date and 2.8 per cent. behind the average daily production during the same period of 1917. Total production for the coal year to date is estimated at 39,634,247 net tons, an increase over 1917 of 723,969 net tons or 1.9 per cent.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended: July 27	Aug. 3	Aug. 10	Aug. 17
Bituminous shipments, 123 roads	228,231	220,940	215,996*	207,822†
Anthracite shipments, 9 roads...	40,942	39,632	39,280	36,857†

* Revised from las' report. † Subject to revision.

Shipments decreased during the week from all districts with the exception of western Pennsylvania, Tennessee and Kentucky, Alabama and the Rocky Mountain and Pacific Coast states. Material decreases occurred in central Pennsylvania, from which districts shipments declined 2500 car loads, or 6.7 per cent.; from southwest Virginia, where shipments declined 221 carloads or 8.1 per cent.; and from the districts including Illinois, Indiana and western Kentucky, where shipments declined approximately 1700 carloads or 3.4 per cent Compared with last year, however, all districts show improvement. For the coal year to date, all districts with the exception of Michigan also report increased shipments over the same period of 1917.

Lake Shipments.—Bituminous coal loaded on vessels at lake ports (including vessel fuel) during the week ended Aug. 17 is estimated at 1,109,611 net tons, an increase over the week preceding of 8.5 per cent. and over the weekly average during the month of July and August of 9.9 per cent.

For the week ended Aug. 17, shipments of bituminous coal to New England are estimated at 586,918 net tons, an increase over the week of Aug. 10 of 3.4 per cent. Rail receipts through the New England gateways estimated at 204,864 net tons decreased 13.8 per cent. compared with the week of Aug. 10, while tidewater shipments estimated at 382,054 net tons increased 15.8 per cent. During the current week shipments from all harbors exceeded the average weekly shipments during the coal year to date, while rail receipts fell 5.9 per cent. behind.

Shipments of bituminous coal from all tidewater harbors during the week of Aug. 17 not only exceeded the shipments during the week preceding, but also the weekly average during the coal year to date with the exception of Hampton Roads. Shipments from all harbors exceeded the weekly average for the coal year to date by 6.5 per cent., from New York and Philadelphia by 3.6 per cent., and from Baltimore by 35 per cent., while shipments from Hampton Roads fell behind 3.8 per cent.

Beehive Coke.—The production of beehive coke in the United States during the week of Aug. 17 is estimated at 581,000 net tons, an increase compared with the preceding week of approximately 1 per cent. The average production per working day is estimated at 97,000 net tons as against 96,000 net tons during the week of Aug. 10

The operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania report production during the week of Aug. 17 of 368,323 net tons, their plants being operated at 71.7 per cent. of their present capacity as against 70.3 per cent. during the week preceding. Loss of time attributed to car shortage amounted to 2.5 per cent. of present capacity as against 0.6 per cent. during the week of Aug. 10, but such losses were offset by slightly improved yard labor conditions and other causes not reported.

Byproduct Coke—Operating conditions in the byproduct industry during the week of Aug. 10 were not as good as the week preceding, a slight shortage of byproduct coal causing the plants to be operated at 9.0 per cent. of their present capacity as against 91.5 per cent. during the week of Aug. 3. Operators in Illinois, Indiana, Kentucky, Maryland and Massachusetts report decrease in production. Factors limiting production in Kentucky and Massachusetts were repairs to plants, in Indiana coal shortage, in Illinois both repairs to plants and coal shortage, and in Maryland other causes. Improved operating conditions were reported in Pennsylvania and Tennessee. The installation of a battery of 51 ovens by the Youngstown Sheet and Tube Co. during the current week was the cause of the increased capacity in that state.

BUSINESS OPINIONS

Marshall Field & Co.—Shipments of dry goods for the week were very much in excess of the same period of 1917. Road sales for immediate delivery were larger than for the same week a year ago. Very few lines are being offered for spring delivery. Slightly fewer customers were in the market compared with the current week a year ago. Collections continue good.

Dry Goods Economist—Prices of all kinds of dry goods continue to advance and in most lines scarcity becomes more marked, while it is evident that this condition will become intensified with the increased purchases of the Government for the equipment of a greater army. In no branch of the trade is the shortage of materials so great, however, as in woolens and worsteds, both women's dress goods and fabrics for men's wear. The price of raw cotton has gradually advanced and speculation in the staple is active.

American Wool and Cotton Reporter—The cotton market is a speculative one, more or less influenced by traders and what happens from day to day. The underlying strength is the dry weather in the Southwest. The outlook for a large crop does not seem so favorable at present, but one thing seems certain, and this is that all the crop will be picked at present prices. The mills are not buying a great deal at present. The woolen goods market is gaining in strength. Fewer persons expect that there will be any allotment of raw material, and on this basis operation for the Government must increase, while at the same time production for civilian distribution must decrease. It is unlikely that prices will be made for woolen fabrics. If new wool is not available, it may be possible that substitutes will be apportioned, but even under such conditions, it does not seem likely that the production of fabrics for civilian distribution will increase greatly.

Bradstreet's—As regards the leading industries, it is useless to advert to anything else than the requirements engendered by the war, which involves the production of increased quantities of steel for ships and munitions. But it is impossible to greatly hasten outputs with supplies of coal, coke and labor entirely insufficient. From every part of the country save Texas come complaints about paucity of labor. In the section just excepted an influx of farmers from the drought-stricken areas has benefited the labor market. Under the circumstances, women are being inducted into industrial pursuits on a steadily extending scale. With new selective draft laws in prospect, further sweeping changes will ensue, and therefore it is not difficult to visualize the near-future situation of the so-called non-essential industries, many of which, however, will be diverted to war work. Crop news, particularly as regards corn and cotton, points to deterioration, but wheat is turning out better than earlier indicated.

The Iron Age—Coal and coke supply still limit pig iron and steel output. The continuance of an adequate labor supply under the new call for fighting men is a serious problem, and even more grave is the situation caused by the set purpose of labor leaders to bring about union control of the steel industry. The situation as to coal and coke and transportation does not measure up to the enlarged requirements of the war. With an average of 360 blast furnaces operating last month, the pig iron output was 110,000 tons a day. With an average of 335 furnaces operating in April, May and June of last year (25 less than in July, this year) the pig iron output for those three months also averaged 110,000 tons a day. Thus 25 more furnaces are required now to keep output up to the rate of last year. The pig iron shortage complained of for months grows more acute; but the proposal from Washington that the few remaining cold furnaces be started up will come to little. Operators of some of the small furnaces now blowing, particularly in the South, threaten to put them out if the pig iron price is not advanced by October.

Atlantic Seaboard

BOSTON

Awkward situation arises through pressure to unload water-borne coal. New England not equipped to take on easily so much coal within so short a time. Demurrage accrues, but consumers take their medicine cheerfully. New ruling on the reserve supply permitted different requirements. All-rail movement shows increase even over July, due to volume of wagon coal. Under the recent decision at Washington it is probable that current shipments to a large number of plants will be shut off, and the coal thrown to needs that have not been so well served. Baltimore piers badly congested and inquiries are persistent as to why normal movement to New York piers is not resumed. Detention also threatens at Hampton Roads. Anthracite volume only slightly reduced all-rail. Reading barges load at New York piers.

Bituminous—The recent agreement in Washington that New England should continue to have the benefit of the 30,000,000 net tons annually of bituminous has resulted in volume shipments on an even larger scale than during July. Both all-rail and by water, coal lately has been thrown at New England as if within the short space of a few weeks we must take all or go without. Both at Baltimore and at Hampton Roads there has been a bunching of steamers to load for New England, a great effort being made to make up this territory's quota, but the number of ships has increased to such extent that it is physically impossible to find enough berths for them at this end to discharge. The Boston & Maine R. R., for instance, needs coal in volume to build up a proper reserve against the winter, but today this railroad is obliged to release coal to other consignees because there are not sufficient discharging facilities at Boston, Portsmouth or Portland, to unload the coal without most expensive delays. Commercial coal for distribution inland, in many cases, has to be unloaded at the same wharves where railroad fuel is handled, and due to the increasing ratio of all-rail receipts of engine coal the past five years the railroads now find themselves unable to take on all the water coal that is offered them.

The ability of a large number of consumers to receive coal at this time is being limited in the same way. At this writing there is a steamer in Boston Harbor that has been waiting six days without an open berth. Larger ships have been taken care of meanwhile because detention of the latter is so expensive, but it is a commentary on the way shipments to New England have been handled that ships are kept waiting when there is a world-wide shortage of tonnage; $2.50@$3 is now nothing unusual for a demurrage charge, and while consumers inland and on tide water occasionally make wry faces their disposition is to accept the situation and be thankful for the coal. It is said there will be 70 steamers this week for Mr. Storrow's advisory committee to allocate, and it will be some problem not only to find cargoes for them all, but to find consignees willing to obligate themselves for the demurrage charges that are certain to accrue to high figures. All this makes a most awkward situation. It is obvious that three months from now, in the latter part of November, this territory will again be in great need of coal, and by that time all the shipping agencies will be swamped with demands from other quarters.

Perhaps the most important announcement of the week is the recent decision at Washington through a committee of state administrators of which Mr. Storrow was chairman, definitely naming the number of days' supply to be permitted different classes of consumers. The understanding is that these limits are to be rigidly adhered to, and that only in special cases and then on recommendation by state fuel administrators to Washington is any deviation to be allowed.

Receipts of bituminous at the five New England gateways show an even larger tonnage than during July. For 22 days in August the average number of cars passing was 723, including railway fuel. Receipts by water have been the largest on record. The increase in bituminous all-rail is due to the volume of wagon-loaded bituminous now coming forward in box cars at the rate of 100 cars or so daily. This coal is rather difficult to distribute just at this time because partly of the 75c. extra price, but chiefly because labor is scarce and it is difficult to free the cars promptly. The car service officials are on the qui vive to find stations where there is any delay in unloading cars, and this volume of box-car coal has to be spread around as thinly as possible.

Congestion continues unabated at Baltimore. It is shown that the piers there are not able to handle with dispatch the volume of coal sent there and in several cases steamers already on demurrage have been shifted to Hampton Roads because the outlook for loading at Curtis Bay was so hopeless. Those distributors on Long Island Sound who are normally dependent to greater or less extent upon coal from Baltimore & Ohio and Western Maryland territory are again asking pertinent questions as to why, if congestion prevails at Baltimore, cannot this congestion be relieved by allowing a greater tonnage to move to the New York piers in the usual way. The Baltimore & Ohio piers at New York are today handling less than 50 per cent. of the coal they could handle, and there is a surplus rather than a shortage of bottoms for Long Island Sound traffic. Of course, the great anxiety has been to furnish cargoes for the increasing number of steamers, but if both Hampton Roads and Baltimore are to be blocked with ships then some other move will have to be made.

The Hampton Roads situation is today rather uneven, but with extra detention threatening. Shippers are fearful that any moment a large tonnage will be ordered to byproduct plants or to line trade or taken for Government use at the piers and are therefore proceeding very cautiously on their commitments to load bottoms.

Anthracite—Receipts of domestic sizes at the gateways average 440 cars daily for the period Aug. 1-22, only a slight reduction in the tonnage as reported for July. Steam sizes are sagging off and today with the volume of bituminous in hand consumers are disinclined to buy further.

Reading barges are now loading at Port Reading, N. J., instead of at Philadelphia. This is partly due to submarine threatening and partly due also to an effort to speed up movement. The Port Reading piers, of course, have not the facilities and more than likely the extra detention there will more than offset the difference in mileage for the tugs. The Railroad Administration is still given to experiments but one could wish a more favorable time to try them out.

NEW YORK

Receipts of anthracite show gain and situation is an improvement. Tidewater conditions are better and with demand easing up dealers believe real danger is past. Steam coals are in good demand. Bituminous conditions easier with demand for bunker coals remaining heavy. No delay in loading vessels. Commercial coals scarce.

Anthracite—Receipts show a steady gain and dealers are beginning to feel that with consumers exercising a little care the situation next winter will be a large improvement over last. With coal coming here in slightly increased quantities, there is a strong feeling that dealers will be able to clean up most of the urgent orders now on their books, particular attention to be paid to orders of one and two tons. With this object before them there have been conferences between the Fuel Administrators and retail dealers in some of the Boroughs of Greater New York, but no definite plan has been outlined pending definite assurance from the Fuel Administration as to what can be done toward increasing receipts.

The dumpings at the local docks for the week ending Aug. 23 were 7616 cars, an increase of 547 cars over the previous week. On Aug. 21, 1409 cars were dumped, which is thought to be a record for any one day.

The tidewater situation is gradually getting better. More coal is being handled and dealers are not so urgent for shipments. Boats are plentiful, but the rates are high. Chestnut coal is running easier than either of the other sizes. Egg and stove continue to be tight, with pea in bad shape. The steam coal situation remains practically unchanged. Buckwheat No. 1 is in good demand and there is plenty to meet all needs.

sary demands. Some shippers find it hard to dispose of their stocks of barley and culm, owing to the scarcity of bituminous, but there is no grumbling. In some sections of the Greater City stove coal is in greater demand than egg.

The situation in Brooklyn and Queens, where fears have been entertained of a serious shortage, is picking up. Efforts are under way whereby every consumer will have some coal in his cellar by the time it is necessary to start the furnaces. It may be that the plan will include the dumping of the coal on the sidewalk and that the buyer will have to put it away in the cellar bins, much time being saved thereby.

It is expected that the full winter schedule of prices for coal at Tidewater will become effective on Sept. 1, although no announcement has yet come from Washington. This will mean an advance of 30c. per ton to the present prices for the domestic coals.

Current quotations, per gross tons f.o.b., tidewater, at the lower ports, are as follows:

Circular	Individual	Circular	Individual
Broken..$6.75	$7.50	Buck...$5.10	$5.90
Egg.... 6.35	7.10	Rice.... 4.65	5.10
Stove... 6.60	7.35	Barley.. 4.15	4.30
Chestnut 6.70	7.45	Boiler.. 4.60	
Pea..... 5.20	5.95		

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates. Prices for buckwheat, rice, barley and boiler are not fixed by the Government.

Bituminous—Judging from the tonnage dumped at the local docks during the week ending Aug. 23, consumers supplied by this market are getting their share of the output. There were 7091 cars dumped as against 6413 cars the week previous, a gain of 322 cars.

With the adoption at Washington of the report framed by state fuel administrators showing the maximum limits of storage, public utilities and preferred industries in Southern New York and New Jersey will not be allowed to have more than 30 days' supply of steam coal on hand, while non-preferred industries must get along with 15 days' supply. Of byproduct and gas coals, byproduct and gas plants may have 45 days' supply ahead and preferred industries may carry 30 days' supply.

The demand for eastern coals is steadily increasing, particularly for Navy and transport service. Locally the bunker situation is in good shape. Vessels are quickly loaded and there is no delay reported from that quarter, although the demands remain heavy.

The commercial coal situation is in good shape, considering conditions. Demand is heavy and consequently stocks at the docks are low. Some shippers with coal to their credit in the pools are surprised when they put boats in for it, to learn that it has been absorbed and that there is no coal for them.

There are persistent rumors of contemplated changes in the status of jobbers. These proposed changes, which are said to include the almost elimination of jobbers who have began business since April 1 of last year, are now said to be under consideration by the Washington authorities. There has been no increase in coals available for spot buyers and regular customers are getting good supplies.

Current quotations, based on Government prices at the mines, net ton, f.o.b. tidewater, at the lower ports, are as follows:

	Mine Gross	F. o. b. N. Y. Gross
Central Pennsylvania:		
Mine-Run, prepared or slack.....	$3.30	$5.45
Upper Potomac, Cumberland, and Piedmont Fields:		
Run-of-Mine.....	3.08	5.23
Prepared.....	3.36	5.51
Slack.....	2.80	4.95

Quotations at the upper ports are 5c. higher.

PHILADELPHIA

Anthracite demand grows as summer wanes. Car service causes trouble. Greatest shortage of coal in suburban districts. Drastic ruling on long hauls. Production increases, and local shipments to some extent. Relative demand of sizes unchanged. Broken coal allotted. Lightless night violators fined. Bituminous suffers from car shortage. Production slightly off.

Anthracite—As the end of the month approaches the shipping companies are again besieged for coal. The small dealers, not only in the city but from the surrounding country, are becoming most persistent. When the smaller buyers learned that they must depend on their 1916-17 quota, with no opportunity of increasing their business, they anticipated no difficulty in obtaining their meager allotments and did not at first give the matter much concern. Now, with fall almost upon them, they appear almost panic stricken; and some who claimed their tonnage for the basic coal year was too insignificant to worry the shippers about are now clamoring for every ton. In many instances they are hunting up their county fuel administrators and appealing to them for aid.

The city fuel administration has just handed down a drastic ruling on long deliveries. All dealers have been notified that after Sept. 15 they must discontinue making deliveries to customers at exceptionally long distances from their yards. It is left up to the dealers to decide just what is a long haul. The authorities say the dealers have had all summer to look after such customers and after the above date they must turn such orders over to dealers nearby the customer. This ruling in a way recalls the rumors that were strongly current last spring that the authorities intended to district the city and the chief complaint of the retailers against the ruling is that the administration left it until so late in the season.

We still incline to the belief that the city is receiving an increasing proportion of fuel, but the dealers are not willing to admit this. Yet this week the largest retail company used considerable newspaper space stating that the orders which they had taken so far, and which they had expected to be until Oct. 15 in filling, were more than half filled and they notified the public that they would use every effort to fill the others and had hopes that they would be able to do so.

We have found yards in some localities that are practically full of coal, while an adjoining dealer has no stock at all. These cases cause bitter complaints from the latter class of dealers. Upon inquiry we learned that such cases are not at all uncommon, being caused by a shipper, usually a small operator, who desires to fulfill his obligations for the coal year to a certain customer and then close the business relationship with him. This of course cannot be understood by the dealer whose credit is good but who has no coal.

The dealers are becoming impatient at the delay of the railroad companies in adjusting claims. Coal is sometimes transferred enroute and the original consignee stands charged with coal for weeks. When coal is lost in transit, and for which the railroad companies always stand responsible, the dealers hesitate to accept it for fear of not being reimbursed for an indefinite time. It is only their urgent need of coal that impels them to accept it.

Egg and stove in the outlying sections and stove in the city proper are by far the scarcest sizes. Pea coal continues to be eagerly unloaded, but there is considerable in stock in several yards. As the exemptions from Washington on buckwheat coal are coming through more promptly for necessary consumers, this size is not so free with some customers as it was for a few weeks. However, we do know of one large company who has had sufficient of this size to offer to a few favored retail customers and while a few of them turned it down, others eagerly grabbed it and stored it away.

This week the anthracite companies were all notified of their allotments of broken coal which they are expected to ship from now on to the gas companies throughout the eastern seaboard. One company alone in this city is to receive 125,000 tons. Broken is a size that always has to be made specially, and as a matter of fact the companies can get a better price for the coal by breaking it down into the smaller domestic sizes.

This week over 100 persistent violators of the lightless night rules were called before the fuel authorities and fined. They had been given a number of warnings, but continued the violations, with the result that they were given the option of contributing to the funds of the Red Cross or being prosecuted.

The steam coal trade shows no sign of change, all sizes being quickly cared for. There is also some indication of a slightly increasing demand for culm locally, but the heaviest demand continues to be from outside points.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken.....	$4.90	$6.25	Buckwheat..	$3.40	$4.45
Egg.....	4.50	5.85	Rice.....	2.90	3.80
Stove.....	4.75	6.10	Boiler.....	2.70	3.70
Nut.....	4.85	6.20	Barley.....	2.40	3.30
Pea.....	3.45	4.70	Culm.....	1.25	2.15

Bituminous—There is much dissatisfaction still manifest over the distribution of cars in all districts shipping to this territory. The chief complaint comes from central Pennsylvania and it is the old story of one mine being short, while others have more than they can fill in a single day. This condition is again showing its effect in the labor supply, as the men are inclined to shift to the workings where the car supply is best.

Heavy consumers in the city, those on strictly war work, continue to get the heaviest shipments, and this is especially true of power plants, who now have the biggest stocks of their career on hand. There continues to be some delay in shipments at tide points to strictly coastwise destinations, although the overseas trade is not affected at all.

BALTIMORE

Successful application of plan to cut down coal supplies of preferred class here to be applied nationally. Jobbers as purchasing agents, working with fuel administrator of state, found solution for shortage. Hard coal men have labor and supply troubles.

Bituminous—After laying a plan before the National Fuel Administration about three weeks ago for the relief of an acute fuel shortage in non-preferred business classes here, the Maryland administrator was given permission to put it into practice. Reports gathered from all lines of industry here had shown that some of the preferred class had coal supplies on hand for from 90 to 155 days ahead, and with steady supplies that not only assured them of coal for immediate use but also some for additional storage. Other industries were shown with but a few days' supply on hand.

It was shown that the lists forwarded by the administrator to the district representative for filling had not been met because of lack of authority to divert preferred coal. The administrator was given permission to put stop-orders through the district representative to mines that were to supply industries here with large stocks on hand, and to order shipments to other industries without coal. The old jobbers' group, now purchasing agents, were then used to distribute all excess coal diverted here through the same means to the Maryland administrator, and this worked so successfully that the past week not only saw few complaints of business houses short of coal for immediate needs, but the administration was able to get enough coal running direct from mines to prevent any further stop-shipment orders being executed.

That the national administration last Thursday admitted the justice of the plan by ordering definitely that Maryland public utilities be allowed but 30 days coal in advance, along with the preferred industries of a war-character here, and non-preferred industries of the state but 15 days supply ahead, is of considerable interest. For gas coal the byproduct and gas plants are allowed 45 days' supply; preferred industries 30 days, and non-preferred no storage of this fuel. Limits for storage for industrial plants throughout the country are to be enforced.

Anthracite—The labor shortage is becoming more and more acute in this city, and many of the coal yards are unable to have their deliveries keep pace even with the comparatively small amount of coal allotted them. Unless some increase in price is granted the dealers, in order that they can raise the wages of drivers and yard helpers to a point where they can be retained against prices offered for war-work, the trade feels that a serious situation will develop shortly. Confronted by the July fall-off in tonnage and the fact that the spurt for early August is not now being maintained, Robert F. Roberts, chairman of the city committee of the fuel administrative force here, went to Philadelphia the past week to confer with the Anthracite Committee about speeding movement to give Maryland the allotment originally promised before heavy winter weather comes. He was unable to get any promise of improvement, however, especially in view of a decrease in tonnage production announced for the week. "We are doing the best we can," is the answer now to the cry for more coal reaching all branches of the fuel administration and the dealers themselves.

Lake Markets

PITTSBURGH

Car supplies uncertain. Supply of labor being considered. Coal very scarce.

Car supplies in the Pittsburgh district have improved slightly, but it is too early to determine whether this marks a general trend or is merely incidental. No official information is available as to whether

Railroad Administration feels able to comply with the request of the district, made Aug. 16 through R. W. Gardiner, manager of production for the district, for a larger car supply, predicted largely upon the fact that during the first half of August there was a decided decrease in the car supply, although the July supply had not been satisfactory and had not permitted sufficient Lake shipments to promise making up the full Lake quota by Oct. 15, the date by which it had been hoped the Lake movement could be completed.

On Aug. 21 a conference was held between John C. Frazee, Federal director of the Public Service Reserve, and other representatives of the Federal employment service, with more than a score of the leading coal operators of the district, relative to the amount of labor the coal district could employ, but no definite figures were approved, chiefly because the matter hinges so largely upon prospective car supplies. It appeared that if the men now on payrolls would work full time the present car supply could be fully utilized. For an increased supply more men are in all probability required.

There is more complaint by byproduct coke ovens that they are not receiving full supplies, and this indicates the scarcity of coal, since byproduct ovens are given a high degree of preference. The shortage at byproduct ovens, however, is not regarded as serious, the chief matter being that it is desirable for them to accumulate a surplus against the winter.

The market remains quotable at the set limits: Slack, $2.10; mine-run, $2.35; screened, $2.60, per net ton at mine, Pittsburgh district, brokers being allowed to charge 15c. brokerage in addition. The brokers find practically no coal at this time.

TORONTO

Dealers months behind in deliveries and refusing orders. Many consumers unprepared for cold weather. Civic authorities promise rigid enforcement of restrictions. Quotations nominal.

Conditions as regards coal supply have shown little change during the past few weeks. Dealers are still months behind in making deliveries, and new orders are now being taken. A large proportion of the consumers are still without their winter supplies of hard coal. Bituminous is more plentiful, but it is difficult to obtain deliveries, and some dealers are taking orders only on condition that purchasers do the teaming themselves. The civic authorities announce that the order to the effect that householders whose usual supply is in excess of six tons will receive only 70 per cent. of their customary supply will be strictly enforced. Coal dealers are ordered to make returns weekly showing amount of coal on hand, orders taken and deliveries made, and if any consumer receives more than the amount to which he is entitled, the excess will be removed.

Quotations for best grades per short ton are nominally as follows: Retail anthracite, egg, stove, nut and grate, $11; pea, $10; bituminous steam, $9.25; slack, $8.25; domestic lump $10.50; cannel, $13. Wholesale f.o.b. cars at destination, three-quarter lump, $7; slack, $5.82.

BUFFALO

Rather slow movement. Anthracite still more scarce than bituminous. Reduction of shipments to Canada appear to be warranted. Cars not so scarce.

Bituminous—The trade is decidedly dull, and some shippers are getting the notion that the actual demand is not what it was. From the action of the Fuel Administration it would appear that the shortage is expected to increase, but such is hardly the appearance of the trade here. Buffalo has been hard hit by the various rulings, first by ordering coal to the lakes from the Pittsburgh district, then to New England from all available districts, then the cutting of Ohio coal out of this market, and finally the reduction of Canadian shipments 50 per cent.

Still jobbers agree that the supply to Canada has for quite a long time been better than it was with us, and especially as one proceeds eastward. Canada paid a better profit to the jobbers, and the roads there sent their cars to the mines direct and had an advantage in that, so that the anthracite consumers were able to buy bituminous to make sure of a winter supply of something, though they did not on that account abate their demand for anthracite. The situation all through is not certain, though, and the consumer is warranted in doing what he can to provide fuel.

The jobbing situation does not improve. Some members of this branch of the trade say they have not made a living since last fall, and they do not know which way to turn. They have made vain efforts to obtain closer mine connections or to buy control of mines, but with little or no success. The outlook is not promising.

Bituminous prices are for the most part made by the operator. The jobber does not venture to set up local prices, saying that it is easier to sell at mine prices and let the consignee do the rest. The added costs make the delivered prices as follows: Thinvein Allegheny Valley, all sizes, $4.65; Pittsburgh lump, $4.45; Pittsburgh mine-run and slack, $4.20; smithing and smokeless, $5.60; cannel, $6.20, all per net ton, f.o.b. Buffalo.

Anthracite—The prospect of another advance in local prices sets the consumers to teasing for coal with renewed vigor, but a supply that is not over half what it was in the spring does not make any improvement possible. The shippers give no explanation, except to say that it will all come out right when the fall shipments improve. Complaints of consumers who have managed to get more than they are entitled to come in, but all the distributors can do is to shrug their shoulders and say it is a violation of the rules.

The western and northern shipments are badly curtailed, new restrictions still coming in, so that if consumers in that direction are to keep warm next winter they will need to lay in some other fuel. This state of things does not apply to the lake trade, which is pretty well kept up, though it is plainly the plan not to ship as much by that route as was shipped last season.

Lake shipments have made a spurt to 130,000 tons for the week, of which 22,800 tons cleared for Duluth and Superior, 16,000 tons for Fort William, 40,800 tons for Chicago, 41,700 tons for Milwaukee and 9 00 tons for Green Bay.

Lake coal freights continue at 48c. to Duluth, Fort William, 50c. to Green Bay, 55c. to Milwaukee and 60-65c. to Chicago.

DETROIT

Inadequacy of domestic fuel supply continues a troublesome feature of the Detroit market. Manufacturers' appeal to Federal authorities brings no increase in allowance of anthracite. Lake trade shows slight shrinkage.

Bituminous—While shipments of bituminous coal into the Detroit market make a fair aggregate, the tonnage is not greatly larger than is required for supplying the present needs of the steam coal users. There is little stock in excess of these requirements that can be utilized in increasing the factories' reserve piles. For the present, however, interest centers largely in the matter of coal for household use. With the domestic consumers of Detroit allowed only 601,000 tons of anthracite and dependent almost wholly on bituminous to offset not only a 24 per cent. reduction in supply of anthracite but the loss of smokeless and coke as well, the conditions are creating much uneasiness not only among the coal trade but among the household consumers.

In a survey made under direction of the Detroit Board of Commerce it was revealed that approximately 88 per cent. of the population of the city are still unprovided with winter fuel. Even were coal coming into Detroit in much greater quantity than it is now, it is doubtful if satisfactory distribution to all those without coal could be effected before the actual need for its use arises. With shipments holding their present volume the distribution problem is greatly complicated.

Anthracite—Disappointment was the most prominent result of the trip to Washington of a special committee of Detroit manufacturers to urge on the Federal authorities the importance of increasing the city's allotment of anthracite. The committee, headed by J. J. Crowley, president of the Detroit Board of Commerce, and accompanied by W. K. Prudden, fuel administrator of Michigan, made its appeal to the Federal Fuel Administration, to the Railroad Administration and to representatives of the War Industries Board, but was told an increase in the city's allowance of anthracite would be impossible. A promise was given by the Fuel Administration that efforts would be made to have a larger amount of domestic bituminous sent forward to Detroit during the next month. The larger part of the bituminous arriving at present consists of mine-run. This, it is said, cannot be used to advantage in the hot air furnaces, which are the only heating equipment of hundreds of Detroit homes.

Lake Trade—Various conditions have combined to bring about a shrinkage in the volume of coal being moved over the lake routes. Ore carriers delayed in thick weather were slow in unloading, reducing tonnage supply early in the week. Loading for the week is likely to fall short of 1,000,000 tons of cargo coal.

COLUMBUS

The major portion of the efforts in the coal trade now put forth are used in getting a sufficient tonnage to the Northwest in order to tide over the winter. There is a strong domestic and steam demand.

The coal trade in Ohio is now wholly at the mercy of the priority order issued by the Federal Fuel Administration. Exceptions to the ruling are appearing almost every day, and as a result there is a fair tonnage moving to public utilities and essential industries. But on the whole the greater efforts are being made to secure 28,000,000 tons for the Northwest before the winter closes lake navigation. In the meantime the steam and domestic demand can be cared for only out of the leavings, so to speak.

The movement to the Northwest has now reached a high level. The vessel movement is generally efficient and practically no time is lost at either end of the journey in loading and unloading. The ore movement is good. In some instances lake vessels are going up light, but such cases are quite rare. Reports show that the coal is moving off the docks of the upper lake ports quickly, and there is no congestion to hold up traffic. The tonnage is still considerably behind pre-season estimates and supreme efforts will be required to fill the requisitions. Lake prices are strong at Government levels.

The steam business is rather quiet, due to the operation of the priority order. A considerable quantity of screenings is coming into the Columbus market as the lake trade produces it. But it is only due to large surplus stocks accumulated earlier in the season that there is not considerable shortage of coal among manufacturing plants. Public utilities are being looked after with exceptions to the priority order, and the same procedure is used in the case of supplying essential industries. Non-essentials are having the worst time in securing fuel. Railroads are still large consumers as the freight movement is extra heavy.

The domestic trade is rather quiet also. Dealers stocks are generally low and they have not been able to replenish them as desired. But there is some coal in the yards of retailers and consumers are still placing orders. Generally speaking, private users have a larger amount of fuel stocks at this time than ever before, and that is a reassuring factor. Retail prices are strong at fixed levels. Practically no Pocahontas is arriving in the local trade. Some West Virginia splints are received and find a ready sale.

CINCINNATI

Fair car supply, steady demand and some removal of domestic pressure mark the trade just now. Lake movement is in full swing.

The movement of coal through this gateway to the Lakes, as well as to points north, continues in a steady volume, aided, as to the Lakes, by the operation of the priority order, giving preference to cars loaded for the ports. The car situation is not so good as could be desired, although on one or two roads it is better than on others. Receipts of new cars, the result of the large contracts let by the Government, have not yet begun to exercise any perceptible effect on the enormous demand for rolling stock, and production, while below the maximum demand now fully in evidence, will probably continue for some time to be in excess of the ability of the railroads to handle. One favorable sign is that the retail trade seems to be fairly well taken care of, indicating that the heavy storage demand from domestic consumers, which has been pressing all summer, has been to a large extent satisfied, and that, accordingly, there is little danger in this immediate section of any serious domestic shortage of fuel next winter. However, it is of course the large industrial consumers who have most cause to worry, especially those whose operations cannot be classed as essential to the conduct of the war. It is probable that many such concerns will find it necessary to suspend operations next winter, as it is virtually certain that there will not be enough coal to supply all industrial and domestic requirements, and the non-essential industries will consequently be left, literally, in the cold.

LOUISVILLE

Car shortage more serious during the past week, with labor supplies considerably under needs of mine operators. Jobbers having considerable trouble in securing coal. Retailers meeting with good demand for domestic, but making prompt deliveries. No yard stocks accumulating, but plenty of steam coal on hand.

Conditions at the mines have been worse during the past few days than for some

time past, due to the fact that cars are so scarce that mines in western Kentucky have been forced to close down half and full days at a time awaiting an unsteady supply of cars. The present shortage of cars is largely due to the heavy movement of coal from the Virginia-Eastern Kentucky district to the Lake region, which is keeping cars on the road for long intervals, either under load or returning empty, resulting in additional supplies of cars moving into that district, and cutting short the supply for western Kentucky. Even the eastern Kentucky district is short of cars at the present time.

Retailers have caught up fairly well with domestic stocking orders, and are now making prompt deliveries, in some cases deliveries on the same day that the order is placed. However, the domestic demand is taking care of all the coal delivered on the market, and no yard stocks are accumulating. Practically all stocking is on western Kentucky coal, and some little Hazard coal, but all eastern Kentucky, Straight Creek, Jellico and other good grades are now moving to the lakes, with the result that the better grades are practically unobtainable for domestic consumption, and even concerns which can not burn low grade coal are having trouble in securing supplies. The steam demand has been fairly active, but steam coal has been accumulating to some extent. A number of old contracts have been renewed of late, and with heavy expirations of contracts in September and October, the steam outlook is promising.

Jobbers are having much trouble in securing supplies of coal, as eastern Kentucky coal is unobtainable, and the western Kentucky mines are being offered more business than they can take care of, with the result that the jobbers cannot find supplies of any moment.

BIRMINGHAM

Coal production falls below tonnage of previous week. Manpower at mines seriously affected by draft. Car supply also inadequate to insure full time operations at some points. Demand for steam and domestic holds up well. No surplus coal available.

The output of coal in the Alabama field for the week ending Aug. 17 showed a loss of 16,000 net tons over the previous week's record of 427,000 tons, according to figures tabulated in the office of District Representative E. A. Holmes. This loss can be attributed to three causes—failure of labor to work full time, shortage of labor, and inadequate supply of equipment for loading coal. The draft is taking many men away from the mines and paydays during the past week caused the usual resultant idleness.

As regards market conditions, trade is brisk in both steam and domestic sizes, and consumers of a nonessential character are having difficulty in securing a fuel supply. Domestic coal is being stored as rapidly as conditions of supply will admit, and the past few days of fall-like weather will likely accelerate the buying movement, if such be possible.

Coke

CONNELLSVILLE

Labor conditions slightly better. Connellsville coal for byproduct ovens. Screenings from dumps increased. Coke production about stationary.

Oven labor conditions appear to be somewhat more satisfactory, but the drain of coal from the Connellsville region to operate byproduct ovens recently completed is such that beehive ovens are hardly able to maintain their former rate of production, which in April, May and June was about 340,000 tons a week and in July rose to about 350,000 tons. As matters are now aligned an output of about 325,000 tons a week seems to be in prospect, but as more byproduct ovens are completed it is possible that this may be reduced. The change in point of coking is of course only by the producer-consumer class. The merchant ovens in the region are making fully as much coke as formerly.

Allocations of surplus coke, or coke that might possibly become surplus, continue to be made, and the appearance of any furnace coke in the open market is practically prevented. Offerings of foundry coke continue relatively free and the supply appears to be not only adequate to current consumption but to afford an opportunity for some foundries to stock coke against the winter.

Production of screenings from old dumps, chiefly for household use, continues to increase, partly by reason of new undertakings and partly by reason of a slightly better labor supply. When not under 3-in. and properly prepared this material would be permitted a price of $7.30, the price set for such coke in general, but on account of appearance the material must necessarily go at a discount, and $6.50 is about the highest price obtained. Even at the increased rate of preparation the dumps are expected to last the year out.

The market remains quotable at the regular set limits; Furnace, $6; foundry, 72-hour selected, $7; crushed, over 3-in., $7.30, per net ton at ovens.

The "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended Aug. 17 at 326,610 tons, an increase of 7600 tons.

Buffalo—The coke trade is easy as regards the supplies of ore and flux, but as difficult as ever as to the supply of coke itself. The furnaces are in as close touch with the coke ovens as they can be, and that is their salvation. The supply is never adequate, but it manages to answer in some way and all the furnaces are able to keep running. In the ore trade all is booming. Lake receipts for the week were 330,376 gross tons, a good season's average, which is likely to keep up. Every effort is made to keep up the output of the byproduct coke ovens in this district, but the new plant building by the Donner-Union Co. in the city does not promise to be in running condition this year.

Middle Western

MILWAUKEE

Dealers looking for an advance in soft-coal prices, and possibly in anthracite, on Sept. 1. Supply outlook good.

There have been no new developments affecting coal prices at Milwaukee since the recent advance of 40c. per ton in anthracite grades. State Fuel Administrator Fitzgerald is in Washington, ostensibly to confer with the National Fuel Administration concerning priorities to the Northwest, but dealers are expectant that when he returns he will bring orders for an advance in bituminous coal, and possibly the customary September lift in anthracite.

Before leaving, Mr. Fitzgerald made Milwaukee's colony of florists happy by giving them permission to use 100 per cent. of their fuel needs provided screenings are utilized. Heretofore they were permitted to use only 50 per cent. of their actual needs and were denied anthracite absolutely. This order is taken to indicate that the demand for some grades of coal is not taxing the supply to the utmost.

From present indications Milwaukee is safe from a serious coal shortage. Consumers will have to be satisfied with most any grade of coal, however, and everyone must practice economy in fuel consumption.

Since last week's report coal receipts aggregated 27,993 tons of anthracite and 204,951 tons of bituminous. The season's receipts thus far, according to the latest revision, foot up 306,863 tons of anthracite and 1,882,720 tons of bituminous.

A Vesper, Wis., brick manufacturing concern has decided upon an investment of $500,000 to develop Wisconsin peat beds. Experts hold that a good quality of coke can be produced from peat, as well as the regular coal byproducts, such as gas, ammonia, etc. Wisconsin peat beds are almost inexhaustible and represent a potential saving in coal of millions, according to expert calculation.

ST. LOUIS

An unusually quiet market on everything. Domestic orders practically stopped. Steam coals heavy. Severe car shortage. Poor transportation keeping prices up. Country demand poor and extreme warm weather interferes with business.

The local situation is one that is considerably hampered by the continued hot weather. The local coal business is practically at a standstill. Orders have stopped coming in, and the yards are making poor deliveries. The labor shortage is interfering with the deliveries in a retail way and this threatens to become a serious matter in a short time.

During the past week Fuel Administrator Crossley, in conjunction with the St. Louis Fuel Committee, has put on inspectors to keep a record of the employees of coal companies, with a view toward reporting them to the police authorities as idlers if they do not continue to work.

There is a fairly good demand in a domestic way for Carterville coal, but it is extremely hard to get. The local steam demand is not anywhere near what the mines have to offer, and the Chicago market is not absorbing steam sizes in sufficient quantities to keep the prices anywhere near the Government maximum. If it were not for the railroads the market would be glutted.

A fairly good tonnage from the Standard field has moved to Michigan. This, however, has been for the most part screened coal and 6-in. mine-run. The operators hesitate to ship too much of their coal there for the reason that it would create a car shortage here. This is already apparent.

The Louisville & Nashville is furnishing equipment for about one-half time and the Iron Mountain has mines that for five to six days straight have no equipment. The Illinois Central is in bad shape and also the Missouri & Ohio. The road that suffers mostly in car shortage and in transportation is the Iron Mountain.

In the Carterville field the mines have had some relief in the way of water, three or four heavy rains taking care of that temporarily. The supply of electricity from the Public Service Co. still continues to keep many mines idle a portion of the time. Labor is dissatisfied and the operators much discouraged.

A heavy tonnage of this coal still continues to go for railroad purposes, the Fuel Administration apparently falling down in its efforts to divert it to the channels where it could be used to better purpose. Offsetting this is the surplus of coal in the Standard field that the railroads could well take care of. Similar conditions continue in the Duquoin field. The labor shortage here is severe.

The Mt. Olive field still continues to be nearer normal than any other field in the state. Car supply is fair and so is the labor problem. There has been a scarcity of water that affected some of the mines to some extent. The movement has been good and the demand about equal to the production. A good tonnage of this coal is also going to railroads.

In the Standard field some mines on the Illinois Central have been idle for three days straight on account of no cars. Mines on the Louisville & Nashville are working about three to four days a week on account of no equipment. Cars are short on the Missouri & Ohio.

The distribution of cars on the Illinois Central seems to continue to impose unfair conditions upon some mines. There is a surplus of practically all grades of coal in this field, and in the past week some mines were idle rather than work and have coal unbilled. This covered all sizes, and this condition exists at this time.

To relieve this condition Lieutenant-Governor Crossley secured a ruling from Washington that restrictions on all industrial plants in the matter of storage coal would be lifted until Sept. 10, permitting them to store such coal as they wanted for the present and the future of screenings and low grade coal. Western Missouri could use a large tonnage of this coal if the zone restrictions were removed.

In the matter of gas house domestic coke the St. Louis Fuel Committee's contention is that the local price should be based upon the price of deliveries and $6 f.o.b. ovens with the rate from the Earlington-DeKoven field in western Kentucky, which is $1.70. This reduces the wholesale price of coke for the dealers f.o.b. the ovens in St. Louis from $9.60 to $7.70.

There is no change in wholesale prices and all coal is taking the Government maximum excepting Standard 2-in. lump, which is around $2.40 to $2.45, and screenings, which are going at from $1.55 to $1.60. The prevailing market price per net ton f.o.b. mines is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.55@2.70	$2.55@2.70	$2.40@2.70
3x6-in. egg	2.55@2.70	2.55@2.70	2.35@2.55
2x3-in. nut	2.55@2.70	2.55@2.70	2.35@2.55
No. 2 nut	2.55@2.70	2.55@2.70	.....
No. 3 nut	2.55@2.70	2.55@2.70	.....
No. 4 nut	2.55@2.70	2.55@2.70	.....
No. 5 nut	2.05@2.20	2.05@2.20	.....
2-in. scrgs	2.05@2.20	2.05@2.20	1.25@1.50
3-in. lump	.....	.....	2.25@2.40
2-in. lump	.....	.....	2.25@2.40
Steam egg	.....	.....	2.25@2.40
Mine run	2.35@2.50	2.35@2.50	1.85@2.00
Washed:			
No. 1	2.75@2.90	2.75@2.90	.....
No. 2	2.75@2.90	2.75@2.90	.....
No. 3	2.55@2.75	2.55@2.75	.....
No. 4	2.55@2.75	2.55@2.75	.....
No. 5	2.05@2.20	2.05@2.20	.....

Williamson and Franklin County rate is $1.10; Duquoin field, $1; Standard and Mt. Olive fields, 95c.